

**Opera Mathematica,
Tomus Quintus —
continens Romani
Calendarii a Gregorio
XIII P.M. restituti
Explicationem; Novi
Calendarii Romani
Apologiam adversus
Michaellem Maestlinum;
ac Appendicem**

*[Mathematical Works, Volume Five — Exposition
of the Roman Calendar restored by Gregory XIII;
the Defence of the New Roman Calendar against
Maestlin; and an Appendix]*

(1612)

by Christoph Clavius (1538–1612), S.J.

Translation by Scott Weisman



ARS ASTRONOMICA

2026

"Opera Mathematica, Tomus Quintus — continens Romani Calendarii a Gregorio XIII P.M. restituti Explicationem; Novi Calendarii Romani Apologiam adversus Michaellem Maestlinum; ac Appendicem," published in 1612, is in the public domain. All translations, original additions, including illustrations, commentaries, and summaries, are copyright.

The source text was obtained from Bayerische Staatsbibliothek / MDZ and is available at <https://www.digitale-sammlungen.de/en/view/bsb10496548>.

Translation © 2026 Scott Weisman. All rights reserved.

Licensed under [CC BY-NC-ND 4.0](#). Share with attribution; non-commercial; no derivatives.



Published by [Ars Astronomica](#)

Translator Version 2

Upright reason dictates that the recipients of the good, of whatever type and level of beneficence it may be, must show gratitude and blessing to the beneficent person in every way possible, commensurate with the value of the beneficence. And one who has benefited all the people of the world — for example, one who invented a new instrument for the good of the world, or a good book — it is fitting for every discerning person, out of the obligation of love of fellow beings, to at least purchase it, so that the man will profit and his heart will be encouraged thereby to invent yet more good instruments in the world. And similarly, all other wise-hearted people will likewise strive and exert themselves to invent good things and instruments needed for the repair of the world and its perfection.

And therefore, whoever says: "What do I need this new instrument for?" — he does not act well towards the world. For if not for the man who invented it, where would you be? And what would your city do? And more than this, if the man did not exert himself, what would the world do?

— R. Pinchas Eliyahu Hurwitz, *Sefer HaBris HaShalem* (1797)

If you find this translation useful, consider [supporting Ars Astronomica](#).

ArsAstronomica@protonmail.com

A note on the work

Tomus V is Clavius's definitive account of the Gregorian calendar reform, which he principally engineered. The *Explicatio Romani Calendarii* expounds the reformed calendar in full — the correction of the solar year and the equinox, the epacts and golden numbers, the lunar cycle, and the reckoning of Easter — with the great computus tables that put it into practice. It is followed by the *Apologia*, Clavius's two-book defence of the reform against Michael Maestlin's attacks, and by an appendix answering further critics (Joseph Scaliger, Georg Germanus, François Viète). The volume is the fullest primary exposition of the calendar that the modern world still uses.

A note on the translation process

This translation was produced with the [translation-pipeline](#). See the linked repository for details on the process.

This text is the product of a highly refined automated translation process. It has undergone only cursory human review and should not be treated as an authoritative or scholarly rendering. It is offered solely as a reference and reading aid — a way to make an otherwise inaccessible work approachable — and any passage of real consequence should be checked against the original source.

Acknowledgements

Translated with the assistance of Claude. The translator thanks the [Anthropic](#) team for making this work possible.

[Front endleaf, recto. Modern library markings only, in pencil and ink:]

- [Margin: upper left, in ink — shelfmark: "2 Math.[?] 10 / 5"]
- [Centre, in ink, a later hand: "Clavius"]

[Second front endleaf. Blank apart from show-through of the letterpress title page on the following leaf (mirrored and not legible for transcription) and a modern library label:]

- [Library label: "<36613880370018" (repeated twice) / "Bayer. Staatsbibliothek"; pencil "23" beside it; red stamped "S"]
- [Margin: upper left, in pencil — shelfmark: "2 Math. u. 10-5"]
- [Faint offset/show-through of the printer's device from the title page on the following leaf; a paper repair patch and foxing at the lower centre. Nothing legible for transcription.]

CHRISTOPHORI CLAVII BAMBERGENSIS E SOCIETATE IESV OPERVM MATHEMATICORVM TOMVS QVINTVS

**CHRISTOPH CLAVIUS of Bamberg, of the Society of Jesus: MATHEMATICAL
WORKS, VOLUME FIVE**

Containing:

The Exposition of the Roman Calendar restored by Gregory XIII, Supreme Pontiff [ROMANI CALENDARIII à GREGORIO XIII. P. M. RESTITVTI Explicationem], published by order of our Holy Lord **Clement VIII, Supreme Pontiff**.

The Defence of the New Roman Calendar [NOVI CALENDARIII ROMANI APOLOGIAM] against Michael Mästlin of Göppingen [Michael Mästlin], mathematician in the University of Tübingen, set out in two books.

An **Appendix to the Defence of the New Roman Calendar** [APPENDICEM AD NOVI CALENDARIII ROMANI Apologiam], in which Joseph Scaliger [Joseph Justus Scaliger], Georg Germanus [Georg Germanus], and François Viète [François Viète] — who maintained that the calendar ought to have been reformed on other lines — are each refuted separately. There is also added a refutation of Scaliger's *Cyclometria* [Cyclometrica, on the quadrature of the circle].

Diagram. The Jesuit printer's device at the centre of the title page: a square woodcut cartouche with putti at the four corners and a winged cherub head at the top, enclosing a radiant oval medallion. At the medallion's centre stands the monogram **IHS** surmounted by a cross, with three nails below. The oval is ringed by a beaded lettered band, inked and legible throughout, carrying the legend in four segments read clockwise from the lower-left arc:

- Left arc, ascending: LAVDA
- Upper-left arc: BILE
- Upper arc: NOMEN
- Right arc, descending: DOMINI

i.e. **LAVDABILE NOMEN DOMINI** — "Blessed be the name of the Lord" (Psalm 112:2 Vulg.). The band carries no further lettering; the ink ownership inscriptions cross the cartouche frame, not the band.

[Manuscript ownership inscriptions, in a 17th–18th-century hand, written across the device:]

- [Above the device, in ink: "Monast[erij] Schyrenfis." — i.e. of the Monastery of Scheyern]
- [To the right of the device, in a large flourished hand: "Schyrenfis"]
- [To the left of the device, a heavily blotted flourished word, probably the matching "Mon[asterij]" (?) — the letters are obscured by a large ink blot]

MOGVNTIAE [Mainz], at the expense of **Antonius Hierat** [Anton Hierat], printed by **Ioannes Volmari** [Johann Volmar]. With the Grace and Privilege of His Sacred Imperial Majesty.

ANNO M. DC. XII. [1612]

- [Library stamp, upper centre: "BIBLIOTHECA REGIA MONACENSIS"]

**TO THE MOST REVEREND AND MOST
ILLUSTRIOUS PRINCE AND LORD, LORD
JOHANN GOTTFRIED**

Bishop of Bamberg, and Provost of the Cathedral Church of Würzburg
[Herbipolensis], etc., his most gracious Lord —

IOANNES REINHARDVS ZIEGLERVS [Johann Reinhard Ziegler] of the Society of Jesus sends warmest greetings.

I was under no illusion, most Reverend and most Illustrious Prince, when Christoph Clavius first offered his Commentaries to the College of Mainz for publication, that if I took charge of the task it would involve — besides immense labour and trouble — a great deal of risk as well. For everything mathematical is by its very nature so constituted that a single accent or a single point overlooked can produce embarrassing errors. And who is so rash as to suppose that, amid such a multitude of figures and numbers, he can guarantee that nothing will ever escape his eye? Who has a mind so tireless that, contending daily with the intolerable negligence — or should I say the incompetence? — of the copyists, he does not sometimes, worn down by labour and weariness, deal too lightly with much that would require closer attention?

For my part, I could see clearly that however scrupulously I discharged every part of my duty, if any fault did occur, then — such being the temper of the ill-disposed — even what no human care could have guarded against would be charged to my negligence. That is why I could easily have been brought round to the view that, however keenly I favoured the mathematical disciplines of my own accord, I ought nonetheless to keep my hands off so risky a business — had not the authority of the Reverend Father Clavius weighed more with me than the magnitude of the risk and the labour. For I understood that he, being now advanced in years, could not cope with a task so genuinely burdensome; and I was willing to try anything rather than have the entreaties of that man carry no weight with me — a man whom the whole world by common consent has held to be the most celebrated mathematician of our time. At the same time it occurred to me how much it mattered to the common good that nothing should ever be lost of all those works which he had published piecemeal and scattered. So I decided I must not allow myself to appear to have failed either his own most honourable wish or the public good of learning.

Accordingly, having begun two years ago, we have at last, with great effort and expense, reached the end — and, unless my judgement deceives me, with better success than I could have hoped for. One thing alone is chiefly wanting to make my joy complete. I wished nothing more than that the Reverend Father Clavius, already set at the very end of his life, should not depart from this mortal course before he had himself seen this offspring of his brought out by us in a more dignified and more elegant form, and — if it seemed good to him — given it his approval. God, best and greatest, willed it to fall out far otherwise. For in this very

year 1612, on the sixth day of February, just as we were putting almost the last hand to the work, that man died — a man most celebrated for the praise of his very great virtues and learning. That distinguished star of mathematicians ceased to shine among men: the glory of his native land, the ornament of our Society, an adornment of the Christian Church.

How splendid an opinion everyone held of him can be seen even from the admission of a certain

man of no mean standing among the learned, who — though he admired himself rather than others — nevertheless conceded so much to Clavius alone that he said he would rather be criticized by him than praised by anyone else. And those who knew him rather more closely, from familiar acquaintance, report that what was most to be admired in him was this: that with so great a reputation for learning and so bright a name, he kept joined to them, unbroken, so remarkable a piety and modesty that he never ranked any man below himself, and ranked himself below everyone else. For these reasons, since God in his great kindness willed him to be rewarded with immortal honours, he called him — weighed down now with years and with merits — out of this life to those seats of the blessed on which he had always fixed his eyes and his heart.

If this event moves you rather deeply, most Reverend and most Illustrious Prince, as I am convinced it does, given your love for Clavius, I should like you to reflect again and again that there can be no doubt of this: the safety of the Church of Bamberg, for which he prayed daily to God while he lived, must now be all the more dear to him, in proportion as the hope of obtaining from the divine Power what he wishes now shines more surely upon him.

As for myself, I shall keep faith with him dead as I gave it to him living, and shall not allow the commentaries which he consecrated by his last will to Your Name to be inscribed with anyone else's title. For from the very beginning [printed *pincipio*; recte: *principio*], when I took charge of this work, besides the other motives I have mentioned above, there was this too: that I was glad to be offered some occasion of serving Your Glory. And so it often happened that when I was worn out by the sheer length of the labour, nothing spurred me on to persevere more than the recollection of Your Name. Thus it has at last been brought about that I bring before the public five substantial volumes, published in print under your favourable auspices — volumes which, unless I am much mistaken, will last for many centuries, both because of the widely acknowledged reputation of their author's learning and because of the excellence of their subject matter, and

which I am confident will carry the memory of Your Name as far as possible into all posterity.

And yet it is a small thing that I should seem to entrust the fame of Your Glory to perishable paper. That fame will endure of itself, and will flourish, stamped on men's minds by the splendid achievements of your virtues. For this is the road by which Christian Princes must strive toward true immortality: that once they have died, they should wish no other monuments of themselves to survive than illustrious examples of things well done. But if our writings do count for something in celebrating the fame of outstanding men among later generations, then I beg you again and again, most Reverend and most Illustrious Prince, to take this our devotion to honouring you in good part, in keeping with your singular goodwill. I hope you will do so all the more if you weigh it kindly and graciously — not by the magnitude of the benefits you confer almost daily upon our Society, and above all upon your College at Bamberg, and therefore by what you could rightly demand of us, but rather by the slenderness of our resources, and so by how little it is that we are able to offer.

It remains only that I pray God, for the easing of Germany's common grief — Germany, which at this very time lies stricken by the all too frequent funerals of her best Princes — to keep Your Highness safe and sound for as long as possible.

Mainz, the 25th day of March, in the year 1612.

[p. 9 — title page of the first work in the volume:]

EXPOSITION OF THE ROMAN CALENDAR RESTORED BY GREGORY XIII, SUPREME PONTIFF

ROMANI CALENDARII A GREGORIO XIII. P. M. RESTITVTI EXPLICATIO

PUBLISHED BY ORDER OF OUR MOST HOLY LORD CLEMENT VIII, SUPREME
PONTIFF

BY THE AUTHOR

CHRISTOPH CLAVIUS OF BAMBERG, OF THE SOCIETY OF JESUS

[Show-through from the following leaf is visible across this page — the reversed text of the next page's heading ("SANCTISSIMO PATRI AC DOMINO ... CLEMENTI

VIII ...) and of its opening paragraphs shows through the paper; it is not printed on this side.]

TO OUR MOST HOLY FATHER AND LORD CLEMENT VIII

CHRISTOPH CLAVIUS OF THE SOCIETY OF JESUS.

How much weight and importance has always been attached, Most Blessed Father [P. B. = *Pater Beatissime*], to keeping the memory of the resurrection of Christ our deliverer at fixed and settled seasons of the year is easy to gather from this alone: that a great many Roman Pontiffs wished many and most serious decrees to stand on the matter. Indeed, they repeatedly guarded it with the severest pronouncement of anathema, so that no one, misled by the error of certain seditious men, should choose the fourteenth moon of the first month for the observance of that most holy day — men who, shamelessly breaking away from the judgment of the whole Church, were for that very reason called Quartodecimans. I could list here many general councils which by their own authority repeatedly ratified what the Roman Pontiffs had once prudently decreed, and which laid down carefully at what times of the year, by what rite, and with what religious observance the most holy Passover of Christ was to be celebrated. But let one council stand for them all: the one first held at Nicaea, famous for the attendance of three hundred and eighteen bishops of the most outstanding character in every department of life, at which the great Constantine was present, and over which the legates of this Apostolic Roman See presided with the fullest authority. For in that assembly, as the most holy and likewise most learned Ambrose, Bishop of Milan [Ambrosius Mediolanensis Antistes — Ambrose of Milan], reports, many things were decreed by the foresight of those most wise Fathers which seemed to bear on establishing or on advancing the Christian religion. Above all, one matter was seen to with the greatest care: that men most expert in mathematics should be called into consultation, and that a nineteen-year cycle [Cyclus decennouennalis] should be established for the correct celebration of Easter.

Once this was done, it could have seemed that a most serious matter had been sufficiently provided for — had not a few small fractions of hours, neglected in the reckoning of the years and of the lunar months, gradually and imperceptibly dislodged the equinox and the new moons from their proper places. The result was that the very thing the Fathers of the Council of Nicaea had meant to serve as

a kind of guide in the celebration of Easter became instead a guide to shameful error and to contradicting the most prudent institutions of our forebears. The Fathers of the Council of Trent, therefore, who not many years earlier had assembled in that city to restore a collapsed discipline and to check the wicked efforts of the enemies of the Christian religion, judged it to belong to no small part of their office that this drawback I have mentioned should be met at the earliest possible moment. Accordingly they entrusted the task of correcting the calendar to the Roman Pontiff, as the supreme overseer and guardian of the sacred ceremonies and of the ecclesiastical rites. Gregory XIII — a man abounding in every kind of virtue — then took it up, and carried it through so praiseworthily that the new calendar was received and approved by the agreement of nearly the whole world.

And although the authority of the Roman Pontiff ought to stand so high with everyone that whatever he has determined all alike are bound to hold as valid — nevertheless, since in past years there was no lack, and there is no lack at present, of men who rashly (to say nothing harsher) dare to condemn the plan of the corrected calendar, and who try to persuade society at large that they alone have seen more in a moment of time than those most eminent and most learned men who for ten years held meetings in Rome on this subject by the authority of the Roman Pontiff — for this reason it was very wisely decided that, lest the matter should appear to have been settled by authority rather than by argument, the rationale of the corrected calendar should be set out. In this way either the handle for further disparagement would be taken away from the malicious, or, if they persisted in their obstinacy, later generations would have a source from which to draw the strongest possible supports for the defence of the New Calendar.

Since, then, a few years ago Your Holiness saw fit to lay this burden on me — on me, that is, who by God's kindness am the one survivor of all of us who took part in restoring the calendar — even though I recognized that I could not bring strength equal to so great a task, if I wished (as indeed seemed only right) to satisfy the wonderfully divergent opinions of learned men about the correction of the year: still I could not fail to serve the zeal of so great a Pontiff, whom I saw

directing all his cares and thoughts to the good of the whole Christian commonwealth. And so, relying on divine help, I have tried to expound the whole matter in such a way that — unless I see nothing at all clearly — anyone can very easily understand that the plan of the corrected calendar which Gregory XIII

followed is in every respect complete, and that no more perfect one could have been established.

For the rest, I must beg and entreat you, Most Blessed Father, by that singular kindness and clemency of yours, that if I have fallen short of the greatness of the subject and of people's expectations, you will judge it pardonable — partly on account of the difficulty of the subject matter, partly on account of my poor health, partly on account of my now advancing age. For my part, if I learn that my willingness to obey Your Holiness — that is, to obey God, whose place you fill — has not been unwelcome, I shall reckon that I have gained the greatest possible fruit of my long labour.

CLEMENS PAPA VIII.

AD PERPETVAM REI Memoriam.

Whatever our predecessors, the Roman Pontiffs, have piously and wisely established and decreed for the common good of the whole Catholic Church — after long study and lengthy deliberation — we are bound not only to defend by every means against the assaults of wicked men, but also, so far as is permitted in the Lord, to confirm by apostolic authority.

Now our predecessor Pope Gregory XIII, of happy memory, restored the Roman calendar and the ecclesiastical year to their original condition with such care and such success that the calendar just named appears never again to be liable to any change. It had, through the neglect of certain small quantities, drifted so far from the truth with the passage of time that, had Gregory not made timely provision, the sacred day of Easter would generally have been presented for celebration outside the lawful period fixed by the holy councils and the Fathers. Yet certain unprincipled men have gone to such lengths of audacity as to attack this work of great labour, completed by the industry and application of such distinguished men, to harass it with slanders, and to presume to raise this objection against it: that it does not always answer exactly to the motions of the heavens — as though a form of calendar could be devised that, one and the same, would agree perpetually with the run of all the years that follow, and would at no time diverge from the celestial motions even in the slightest. In particular, one François Viète has reached such a pitch of impudence that he has dared to publish a calendar of his own composition, full of errors and plainly contrary to the Gregorian, yet titled *Gregorian*; and he has prefixed to it the letters of the said Gregory, our

predecessor, on the emendation and restoration of the calendar, so that under a public show of truth he might instil the poison of his false teaching.

We, therefore, considering that this calendar was restored by our predecessor Gregory with the utmost diligence and care, men most expert in these matters having been engaged upon the work; that it could rightly be entitled *perfect and perpetual*, since it always stands entire in its principal parts; and that it is no cause for wonder if the cycle of our epacts, distributed through the days of the calendar, does not at every point agree with the motions of the heavens in respect of the new moons and the fourteenth Paschal moons, since this must necessarily happen in every cycle, and it is enough that this error — which cannot be avoided — is found to be far rarer in this new calendar than in any other: for these reasons, in order to explain the calendar more fully, and to remove every occasion of attacking it along with the remaining difficulties, we charged our beloved son Christoph Clavius of Bamberg, religious of the Society of Jesus, a man thoroughly versed in this subject, who rendered outstanding service in the emendation of that same calendar under the same Gregory, to publish expositions of the said calendar, both to confirm the reasoning of the calendar and of Gregory, and to break down the fabrications of all its adversaries. After much labour by lamplight he has at last presented us with the book we desired, and has entitled it *An Exposition of the Roman Calendar restored by Gregory XIII, Supreme Pontiff, published by our command*. In it the errors of the adversaries are clearly refuted, and it is shown that this calendar will be perpetual, so that it will never be subject to any change, not even the smallest, so far as the arrangement of the epacts is concerned — although after very many centuries have elapsed another equation of the solar and lunar year may perhaps have to be instituted.

Wherefore we, wishing to provide in good time that nothing further be objected or fabricated against the said calendar, by these present letters approve the exposition of that calendar published by the aforesaid Christoph Clavius. But all other calendars already drawn up by anyone whatever, contrary in any respect to this one — thoroughly faulty calendars that are being forced upon the Church — and especially the one which the said François Viète published on his own authority, which differs from the Gregorian in this among other things: that in it the epact xxx, or the one marked with this sign *, is not written against the first day of January, as it is in the [Gregorian] calendar [?], but is not so entered as it is in the Gregorian, and the year begins with the epact xxix from the eighth day of March, which is a thing unheard of and utterly contrary to the Fathers of the Council of Nicaea — these, and likewise any others that may perhaps be published hereafter in

the whole Christian world, we perpetually abrogate, and we everywhere forbid and prohibit their use. And we decree that this is to be so held by all, and that whatever may be attempted to the contrary in these matters by anyone, on any authority, knowingly or unknowingly, is to be judged and determined null and void by any ordinary or delegated judges whatsoever.

Enjoining, by virtue of holy obedience, upon all our venerable brothers the patriarchs, primates, archbishops, bishops, and other local ordinaries, and upon their vicars general in spiritual matters, that each of them see to it and cause these our present letters to be published and observed in their churches, cities, and dioceses. Notwithstanding any apostolic constitutions and ordinances, statutes and customs — even those confirmed by oath, by apostolic confirmation, or by any other guarantee — and notwithstanding any privileges, indults, and apostolic letters granted, confirmed, or approved in any manner to the contrary of the foregoing, and notwithstanding anything else to the contrary.

We further will that transcripts of these present letters, even printed ones, signed by the hand of a public notary and secured with the seal of some person constituted in ecclesiastical dignity, shall be given exactly the same credit as would be given to the letters themselves if they were produced or shown.

Given at Rome, at Saint Peter's, under the Fisherman's Ring, on the seventeenth day of March, M.DC.III, in the twelfth year of our pontificate.

M. Vestrius Barbianus.

LECTORI S.

[To the Reader, greeting.]

It is now twenty years and more since we saw the Roman calendar — no lightly corrupted by the fault of the times, and then corrected by the work and industry of the most learned men — come to light under the most favourable auspices of Gregory XIII, Supreme Pontiff. The achievement was the more glorious for that wisest of pontiffs because, although everyone had most eagerly pressed for it and many had attempted it with what I may call obstinate labour, it had never been possible to carry it through to a conclusion as intended.

There is no need for me to recall with what unanimity and with what universal approval the restored calendar was received and commended. I say only this: there was no kingdom of the Christian world, no province, no city, no academy of any distinction, that did not acknowledge that so great a matter had been

accomplished with the utmost wisdom and success, and that did not judge that a plan for correcting the calendar, devised almost by divine inspiration, should be embraced with every effort. And if there are certain corners of the earth to the north, or towards the rising sun, that have not yet received the most welcome light of this emendation, we take it as established that this has come about not so much from love of darkness as from hatred of the Roman Pontiff: because heretics and schismatics count him an adversary to their own positions, they find it utterly galling that so great and so singular a benefit should have been conferred on the human race through him. But surely, just as bodies cast the smallest shadows once the sun is high, so we may expect that in time the growing splendour of the corrected calendar will in some measure light up every shore of the earth, however remote — or at the least will dazzle the eyes of treacherous men, willing or unwilling.

[Margin: Why some have not accepted the new calendar.]

Amid all the advantages which everyone admits the restoration of the calendar has brought to the community of mankind, one thing seemed still to be wanting, no less to the sum of its usefulness than of its pleasure: that the plan Gregory XIII followed in this splendid emendation should be set out publicly, as plainly as could be done. When therefore the most holy and equally most prudent Pontiff Clement VIII noticed this, and saw that many years had now passed since the emendation of the calendar while what was most needed had still never been supplied, he judged that he must by all means see to it that, since the calendar had been corrected and emended by the authority of the Roman Pontiff, the plan of the corrected calendar should likewise be established at the command of the Roman Pontiff.

[Margin: That this exposition of the calendar was published by order of Clement VIII.]

Would that Luigi Lilio of Cirò [Aloysius Lilius Hypsichronaeus], a man most worthy of immortality, who was the first author of so excellent a correction and lit the way for others by his own brilliant discoveries, were still alive! Or at least that some one of the other experts in mathematics — those of us who repeatedly met in Rome by the authority of the Supreme Pontiff, so that we might carry the undertaken emendation of the calendar through to completion by joint effort and counsel — still survived at this time. Then one might indeed hope that the plan of the emended calendar could be so expounded as to satisfy the fair-minded and the hostile alike, and wonderfully well.

[Margin: Luigi Lilio, the first author of the new calendar.]

As it is, however, since God has decided otherwise concerning those most learned men, and since it hardly seems possible for anyone to accomplish so great a task who did not take part in the correction of the calendar itself, I understand that I — who by God's favour am still living — must not shirk a burden otherwise far beyond my strength, especially at the command of so great a Pontiff. And although I see that I have already attempted many things in repeated night labours which, in the judgment of many, reveal the plan of the restored calendar clearly enough, still, since most of those writings answer the accusations of detractors and therefore concern the general public less, and since besides there is not a little which — as I do not deny — we have usefully thought out, this new labour had to be undertaken in full. If, as we hope, we find it approved by fair judges of such matters, we shall have reason to give immense thanks to God, the bestower of all good things.

[Margin: Why the burden of writing this was laid upon the author of this work rather than upon others.]

I am well aware, moreover, that in this exposition of ours there are some points that differ somewhat from Lilio's method of inscribing the epacts and from his equation of them. But since we know that in this very matter the Gregorian calendar itself, published in 1582, departed from Lilio's own method — as can be clearly established from the version sent to the Christian princes in 1577 — we have judged that we too are free not to adhere to Lilio's method at every point. We have done this the more readily because we understand that many things have been changed for the better, by which this emendation of the calendar may be rendered more fully explained and more secure against its detractors.

[Margin: Why the author of this work differs from Luigi Lilio in a good many respects.]

For among other things, with no small labour we have devised new procedures, and not a few of them, by which the cycle of the epacts — in which the whole substance of this correction consists — might be made easier and quicker to use, and by which the equation of the epacts might be corrected, since it was set up less than correctly by the author of the calendar. Next, by what route and method the epact for any year whatever, however remote,

[Margin: What the author of this work has principally added to Luigi Lilio's calendar.]

however remote, is to be worked out without much labour, even if the table for the equation of the epacts — which will be discussed in its proper place — does not extend as far as that year. I say nothing for the moment of the many things we have added from the more expert astronomers, by which the advance and the retreat of the equinoxes are explained, so as to make clearer the procedures by which the vernal equinox is kept in its own seat. Nor will I speak of the new rules by which everything belonging to what is called the ecclesiastical computus [Computus Ecclesiasticus] can be found very quickly on the joints of the fingers.

Among those who have tried to overturn the Gregorian calendar — a calendar confirmed by the approval of almost every nation — two stand out for the fame of their name and for their literary learning, and they seemed to some to have said something [?] to the purpose: Joseph Scaliger and François Viète. It therefore seemed appropriate to attach a refutation of both to this work, and of Viète above all. Viète entered on a scheme for restoring the calendar that was as novel as it was false; not only did he fail to grasp the intention of Gregory XIII — though he boasts grandly that he did — but he even fathered on that Pontiff decrees concerning the new calendar which were his own, that is, false ones, so as to prop up his own utterly frivolous inventions with the papal authority that no one fails to hold most sacred.

To this refutation of Viète's calendar there was no lack of people urging me strongly to add a reply to that same man's *Expostulatio* — a most empty piece, to say nothing harsher — which itself appeared to want to be addressed in this book as well, since it came into my sight at the very time when the opening sheets of my book were being struck off, as usual, on the final presses; and indeed it still breathed something of the Lord's [?] anger. For it had been published as soon as its author learned that I had set about routing his false scheme for correcting the calendar with every resource at my command — as though I were acting unfairly in defending against the rashness of a single man a Gregorian calendar long since established by the votes of all princes and all universities.

But I did not allow anyone to persuade me of this. First, because there is nothing in that *Expostulatio* which does not clearly proceed from an agitated mind. Next, because it contains nothing but abuse and insults, which in my judgement have not so much as reached me. Finally, because more than one of my friends has claimed for himself the task of replying, out of goodwill toward me or out of respect for the papal decrees.

I shall therefore be content for the present with what appears in the diploma of His Holiness prefixed to this work: what the supreme and most holy Pontiff

Clement VIII thinks of my labours; what he thinks of the Gregorian calendar, which Viète loudly proclaims that I have wretchedly depraved and corrupted; and what he thinks of Viète's own calendar. And I shall gladly and willingly pardon François Viète for whatever insulting things he has said about me.

One thing seems to remain: since in this whole matter I have been greatly helped by the discussions held at Rome in the assembly of learned men that we often convened while Gregory was still alive, I should acknowledge this publicly. If I kept silent about it, something might perhaps be taken from another's glory.

For the rest, kind reader, if you notice anything accomplished by us that you judge to be joined with some credit for talent or industry, ascribe it to God, since it is wholly a divine gift; if anything has been wrongly stated or explained, ascribe that to me. As for me, relying on the help of God the Best and Greatest, I shall take up the task itself eagerly — not so much in the hope of completing it as with the will to attempt it and to obey. Farewell.

PROOEMIVM

The holy Roman, Catholic, and Apostolic Church celebrates two kinds of feast days. The first keeps a fixed place in the calendar and comprises those feasts that always recur at set times of the year; these are accordingly called immovable. The second has a movable seat, though one enclosed within definite limits of days, and it takes in the solemnities of the day of Easter and of the feast days that depend on it; these are for that reason called movable.

[Margin: That two kinds of feast days are celebrated by the Church.]

For the first kind only the use of solar months is required — unless someone should say that lunar months are also needed, because the Church in choir, by a most ancient and praiseworthy custom, when announcing in the martyrology the solemnities and birthdays of martyrs, confessors, and holy virgins throughout the year, announces together with each day of the solar month the day of the lunar month as well.

[Margin: That for celebrating the immovable feasts only the use of solar months is necessary.]

For the second kind, which of course has come down to us from the ancient institution of the Mosaic Law, the lunar year must necessarily be employed alongside the solar; for in it both the vernal equinox and the fourteenth day of the moon of the first month have to be observed.

[Margin: That for celebrating the movable feasts both solar and lunar months are necessary.]

But since it has been discovered over a long course of time that neither year, the solar or the lunar, keeps its proper and due magnitude, the result has been that from the time of the Council of Nicaea down to our own age the Church has often celebrated Easter and the other movable feasts contrary to [?] their proper reckoning — which I shall make plain in its own place. Therefore, so that feast days of this sort might be duly kept at their own times, both years had to be corrected.

[Margin: Why both years had to be corrected.]

And indeed many supreme Roman Pontiffs, and not a few general councils, and very many men of the greatest weight and most learned in mathematical matters, have attempted to set their hand to correcting the errors of both years.

[Margin: That many Roman Pontiffs and councils desired a correction of the calendar in this respect.]

For 870 years ago and more, the Venerable Bede the Anglo-Saxon [Bede] had detected the errors in the Roman calendar, and after him, 250 years ago or more, the Greek writer Isaacius Argyrus [Isaac Argyros]. Later, when the same errors had slipped further, Campanus [Campanus of Novara] and Johannes de Sacrobosco [Sacrobosco], both very distinguished writers on the ecclesiastical calendar, remarked on them very clearly. On rooting out these same errors from the Church of God, Nicolaus Cusanus [Nicholas of Cusa] and Petrus de Aliaco [Pierre d'Ailly], both cardinals of the Holy Roman Church, and Johannes Regiomontanus [Regiomontanus], easily the foremost mathematician of his time, wrote a good deal.

[Margin: Which writers chiefly detected the errors of the calendar of the Council [?] of Nicaea.]

Most recently, at the time of the Lateran Council held under Leo X, a good many men worked energetically at emending the calendar. Among them are counted Paulus Middelburgensis [Paul of Middelburg], bishop of Fossombrone; Johannes Stoflerinus [Johannes Stöffler]; Albertus Pighius Campensis [Albert Pigge of Kampen]; and a little later Lucas Gauricus [Luca Gaurico], bishop of Civitate; and other most learned men, thoroughly practised in mathematics. All of them, it is true, wrote at sufficient length and with subtlety on the magnitude of the year — not only according to Roman usage but also according to Greek, Persian,

Egyptian, Hebrew, and Arab usage — and likewise on the months, on embolisms, on the change and variety of months and years, on the lunar cycles, and on very many other matters bearing on the restoration of the calendar. Yet none of them (be it said with their leave) fully attained what was chiefly wanted: namely, what road and what method were to be followed so that the solemnity of Easter, together with the other movable festivals, and also the immovable feast days, might be restored to their original seat, and might remain there permanently without appreciable error.

[Margin: That no one before Gregory XIII achieved a complete correction of the calendar, and why.]

For some, by their correction, threw the ecclesiastical rites into confusion — which was in no way to be tolerated. Others, while taking care to keep the equinox in its own seat, drove the moon out of its proper place; and conversely, while providing for the new moons, they forced the equinox to abandon its own home. As a result, others asserted that it could not be done — that a lunar cycle valid in perpetuity could not be written into the calendar while at the same time a firm and settled seat was assigned to the equinox. We shall set out the difficulty of this in its own place.

[Margin: That most men judged that a perpetual lunar cycle could not be written in the calendar, and that a stable seat could not be assigned to the equinox.]

Luigi Lilio of Cirò [Aloysius Lilius Hypsicroneus] alone achieved the thing successfully — and not without the kindness of God the Best and Greatest — when he devised a cycle such that, once written into the calendar, it shows the new moons in perpetuity, even though a day must sometimes be taken out of the year in order to keep the equinox in its seat. This method, then, Gregory XIII of happy memory embraced with the consent of the whole Christian world, and proposed to all for observance. This was indeed a notable and illustrious deed, one that grateful posterity deserves to

[Margin: That Luigi Lilio alone — whom Gregory XIII followed — wrote a perpetual lunar cycle into the calendar and at the same time assigned a stable seat to the equinox.]

consecrate to everlasting memory. For by it the Christian commonwealth has secured that the solar and lunar years should henceforth proceed by an equalized calculation, in agreement with each other, and that the feast days, both fixed and movable, should be duly and lawfully carried through at their own times according to the decrees of the councils, the pontiffs, and the fathers — the

very thing that so many councils and learned men greatly desired but were unable to obtain.

We have undertaken to explain this same method in the present volume, so that everyone may understand where the whole force and rationale of correcting the Roman calendar lies, and why, when the opinions of others were rejected, this one of Luigi Lilio's was retained.

Since both years, the solar and the lunar, have been restored to their original condition, we shall treat the solar year first and the lunar afterwards. But first it seemed worth the effort to set out the *Compendium* of this new method of restoring the calendar, which Gregory XIII, Supreme Pontiff, sent in the year 1577 to Christian kings and princes and to the most celebrated universities. This is partly so that the memory of it may be left to posterity, but chiefly so that it may be clear to all what was changed in it by those to whom the task of emending the calendar was entrusted.

[Margin: The order the author keeps in this work.]

Next we shall append the corrected perpetual Gregorian calendar itself, which the same Pontiff set before the whole Christian world in the year 1582, lest the memory of that too should some day perish through the passage of time — especially since in this book we intend to expound the foundations and rationale of that correction.

After that we shall explain, before anything else, what is prescribed in Holy Scripture concerning the celebration of Passover, given to the Jews by God through Moses, and what was decreed about the same by the holy fathers and the councils; and how it came about that in our own time the truth has so often been missed in that solemnity, and that it has so often been celebrated contrary to the decrees of the fathers and the sanctions of the councils — so much so that it became absolutely necessary to emend the year and the calendar, lest the errors should grow greater day by day and Easter should at last be forced so far out of its place that no observance of it would any longer be lawful.

And since in the year 1588 we published a fairly long *Apologia* for the new calendar against a certain heretic, in which it was necessary to explain nearly all the foundations of this restoration, we shall transfer from it into this volume everything we judge useful and suitable to the present purpose. This is our right beyond dispute; no one, unless I am mistaken, ought to think we are forbidden to insert in its own and most proper place material that had undoubtedly been set in a place not its own.

Finally we shall set out the schemes of others for restoring the calendar and shall refute them; and for the benefit of students we shall add very short and very easy rules for the ecclesiastical computus.

COMPENDIUM OF THE NEW METHOD

of Restoring the Calendar, by Gregory XIII, Supreme Pontiff

SENT TO THE CHRISTIAN PRINCES AND TO THE MOST CELEBRATED
UNIVERSITIES IN THE YEAR OF OUR LORD 1577.

TO EXPERT MATHEMATICIANS.

[Margin: Why Gregory XIII sent this *Compendium* to the princes.]

The correction of the Breviary and the Missal was reserved to the Roman Pontiff by the sacred Council of Trent, and Pius V, of happy memory, saw to its completion in earlier years with all the diligence he could command and published it. Even so, that work did not seem complete and perfect in every respect unless the restoration of the year and of the ecclesiastical calendar were added to it. While Gregory XIII, Supreme Pontiff, was applying himself to that task with his whole mind and thought, a book written by Aloysius Lilius [Luigi Lilio of Cirò] was brought to him, which appeared to propose a way and a method of accomplishing the thing that was neither inconvenient nor difficult. But since this correction of the calendar brings with it many great difficulties — and since, though it had long been demanded by all good men, often deliberated by the most learned mathematicians, and much debated, it still could not be completed and carried through — the most prudent Pontiff judged that all the most expert men in this science should be consulted about the matter, so that a thing which belongs to everyone in common might also be accomplished by the common counsel of all. He had therefore resolved to send that book to all the Christian princes, so that they, calling in the more skilled mathematicians, might either approve it by their own judgment or, if anything seemed to be lacking, might complete and polish the whole of it; and at the same time, if a more suitable method should be discovered anywhere — which he does not despair of — he might, once it was communicated to him, follow that method instead. But since the book has not yet been printed, this would have been laborious and awkward, and perhaps less necessary for the expert astronomers with whom the method has to be shared. He therefore judged it enough to pass over everything else and

to indicate briefly only the chief heads that contain the substance and the ground of the matter.

[Margin: When Passover/Easter is to be celebrated according to the decree of the Council of Nicaea.]

Now the most holy Passover [Pascha] of Christians, which is bound up with the highest religious observance and with the supreme mystery of our redemption, must be celebrated — by the prescription of the divine law and by the decree of the most holy Fathers who assembled at the Council of Nicaea — from the fourteenth day of the moon to the twenty-first of the first month; and that is the moon which falls on the vernal equinox or follows immediately after it. Those Fathers therefore judged it of the greatest importance that fixed and definite days be assigned in the calendar both for the equinox and for the fourteenth moon, so that no disagreement or dissension over its celebration might arise thereafter, as had often happened before.

[Margin: That the seat of the equinox on 21 March was established by the Fathers of the Council of Nicaea.]

At that Council the seat of the equinox was placed and established on the twelfth day before the Kalends of April [21 March], and they persuaded themselves that it would be more or less stable and certain.

[Margin: That the Fathers of the Council of Nicaea laid down that the fourteenth moon was to be found from the golden number.]

The ancient Fathers likewise believed that the fourteenth moon could be found perpetually and easily from the golden number (as they call it), which had been fitted to the calendar.

[Margin: That the equinox has deserted its own seat.]

But the equinox did not easily keep its place. It abandoned its station and wandered by uncertain steps until it reached the fifth, and even the sixth, day before the Ides of March [11 or 10 March]. Unless this error is met in good time, the equinox will one day arrive at the season at which the winter solstice now falls; nor will it stop there, but will go on without limit. Many have written before now how great a disturbance this will bring upon all matters, and above all upon ecclesiastical ones, and the author of that book discusses it subtly and at length.

[Margin: That before the correction the fourteenth moon was falsely indicated by the golden number.]

The fourteenth moon, moreover, so far disagrees with that golden number that, if we follow the golden number, we now often celebrate Easter not between the fourteenth moon and the twenty-first, but — against the divine precept and the institutions of our forefathers — at the twenty-sixth moon. And this evil will creep on unnoticed and spread wider day by day, unless the necessary remedy is at last applied.

[Margin: That several Supreme Pontiffs attempted to correct the error of the equinox and of the fourteenth moon.]

Indeed, ever since Nicholas V of happy memory — in whose age good letters and the study of the liberal arts, long neglected, began to revive and recover — the remedy has been attempted with great care and zeal by the Supreme Pontiffs; yet nothing seemed capable of being settled that did not run into some great difficulty. So far as astronomy is concerned, two obstacles above all seemed to stand in the way.

[Margin: That it is difficult to assign a stable seat to the equinox, because of the uncertain and varying magnitude of the tropical year.]

The first is the true and certain measure of the tropical year itself. Since the most learned and most careful mathematicians have found this to be one value at one period and another at another, it is proved not to be always the same and consistent with itself. Since, then, the Sun runs its course in so wandering and changeable a manner, it was extremely difficult to distribute the intercalations in such a way that the equinoxes would have fixed and settled seats in the calendar for all time to come — especially as, since Julius Caesar, who first introduced this form of the year and this method of intercalation, thirteen days or more now stand ahead of the seat then established.

[Margin: What remedy Lilius devised for fixing a stable seat to the equinox.]

But the author of that little book promises to bring a remedy for this difficulty, and indeed a permanent one. He adopts the measure of the Alphonsine year, which is a mean among the various values and therefore less liable to error; and from it, when the calculations are worked out, it follows that in roughly 134 years the places of the equinoxes anticipate a whole day. On this basis he judges that the thirteen days we have mentioned — or rather (as he thinks more consonant with the dignity of the Church) those ten days that have accumulated since the time of the Council of Nicaea — should be removed by omitting ten intercalations in the forty years next following. And so, with the vernal equinox brought back to the twelfth day before the Kalends of April [21 March], the place at which

it was fixed by that Council, and with all confusion ended in the year of our Lord 1620 — from which the years will begin to proceed under better auspices — he has established this method of intercalation for all future time: that from that point on, the hundredth years, which are all normally intercalary, shall not all be so, but the first three in each set shall be common years and every fourth one intercalary. Thus in 1700, 1800, and 1900 no day shall be intercalated, but in 2000 the intercalation shall be made in the usual and customary way; and so with the remaining years that follow thereafter.

Or else — since others think one should not wait for those forty years to pass before the rest return to their proper reckoning, but hold that the ten days should be removed all at once and the inconvenience swallowed in a single draught — this shall be done in the year 1582, in whichever month shall seem more suitable, and thereafter the order shall be kept that is set out below in the table. Furthermore, for changes of this kind he chooses the hundredth years above all, as being more notable, so that no negligence or forgetfulness of this variation may creep in.

[Margin: The interruption of the cycle of dominical letters, devised by Lilius as part of his method of equating the equinox.]

This method has one drawback: the cycle of the dominical letter, as it is called, can be of no use during these first forty years, which have to be common years; and thereafter it does not return to the same beginning until four hundred years have been completed. But that is of no great consequence, especially since a table of its own has been devoted to the matter.

[Margin: Why the golden number cannot perpetually indicate the fourteenth Paschal moon in the calendar.]

The second thing that seemed to obstruct the restoration of the calendar and the delivery of a true method for Easter is this: no nineteen-year cycle could be found which, when set beside the calendar, could guarantee that the same numbers would perpetually show the new moon, and from it the fourteenth Paschal moon. And the reason is that the Moon does not, as those ancients supposed, complete her courses in the number of nineteen years and return to the same starting point in such a way as to revolve again through the same tracks. Rather, as has been more subtly investigated and detected by others, she governs and completes her orbits and revolutions in such a way that over a span of three hundred years and something more she disagrees by nearly a whole day from the places of the new moon marked in the calendar. The result has been that the golden number

has by now strayed four days and more from the true places, and that — as we said above — we sometimes celebrate Easter at the twenty-sixth moon, to the grief of devout men and the mockery of the ill-disposed.

Since, then, on account of this motion of the Moon one year in three hundred must pass without intercalation, while on account of the other motion, that of the Sun, in the same span of years there is sometimes three times, and sometimes twice, no intercalation at all, no golden number can serve these two equations in such a way that the places of the new moon do not diverge very widely within a few centuries.

[Margin: That a nineteen-year cycle of epacts can perpetually show the fourteenth Paschal moon in the calendar, provided an equation is applied at fixed times.]

But the author of this little book has ingeniously and carefully devised a certain cycle. Because it consists and is composed of the numbers of the epacts, and advances and is equated through a nineteen-year cycle, he himself calls it the *nineteen-year cycle of the epacts* [Cyclus decemnouennalis Epactarum]. Set beside the calendar, it can guarantee this result by a constant method and one that will last through all the ages, provided an equation is applied at fixed times.

It is as follows.

The Gregorian Calendar — January, February, March.

Each month block has, from left to right: an unlabelled narrow column of reference marks; the column of epacts (labelled *Cyclus Epact.* — "Cycle of the Epacts" — at the foot of the block); the dominical letter; the Roman-calendar designation of the day; and the day of the month in Arabic numerals. The column headings at the top of the table are blank; the only printed label is *Cyclus Epact.* beneath each month.

Ianuarius [January]

Mark	Cyclus Epact.	Litt. dom.	Roman day	D a y
*	[glyph: small ornament, apparently the epact-30 mark [?]]	A	Kal.	1
	xxix	b	iiii	2

Mark	Cyclus Epact.	Litt. dom.	Roman day	D a y
	xxviii	c	iii	3
	xxvii	d	Pr Non.	4
	xxvi	e	Non.	5
	xxv	f	viii	6
	xxiiii	g	vii	7
	xxiii	A	vi	8
	xxii	b	v	9
	xxi	c	iiii	1 0
	xx	d	iii	1 1
	xix	e	Prid. Id.	1 2
	xviii	f	Idib.	1 3
	xvii	g	xix	1 4
	xvi	A	xviii	1 5
	xv	b	xvii	1 6
	xiiii	c	xvi	1 7
	xiii	d	xv	1 8
	xii	e	xiiii	1 9
	xi	f	xiii	2 0
	x	g	xii	2 1
	ix	A	xi	2

Mark	Cyclus Epact.	Litt. dom.	Roman day	D a y
				2
	viii	b	x	2
				3
	vii	c	ix	2
				4
	vi	d	viii	2
				5
	v	e	vii	2
				6
	iiii	f	vi	2
				7
	iii	g	v	2
				8
	ii	A	iiii	2
				9
*	i	b	iii	3
				0
[glyph: small ornament [?]]	xxix	c	Pr. Kal.	3
				1

Cyclus Epact. [Cycle of the Epacts]

Februarius [February]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxviii	d	Kal.	1
	xxvii	e	iiii	2
	xxvi	f	iii	3
	xxv	g	Pr.Non.	4
	xxiiii	A	Non.	5
	xxiii	b	viii	6
	xxii	c	vii	7
	xxi	d	vi	8

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xx	e	v	9
	xix	f	iiii	10
	xviii	g	iii	11
	xvii	A	Prid. Id.	12
	xvi	b	Idib.	13
	xv	c	xvi	14
	xiiii	d	xv	15
	xiii	e	xiiii	16
	xii	f	xiii	17
	xi	g	xii	18
	x	A	xi	19
	ix	b	x	20
	viii	c	ix	21
	vii	d	viii	22
	vi	e	vii	23
	v	f	vi	24
	iiii	g	v	25
	iii	A	iiii	26
	ii	b	iii	27
	i	c	Pr. Kal.	28

Cyclus Epact. [Cycle of the Epacts]

Martius [March]

Mark	Cyclus Epact.	Litt. dom.	Roman day	D a y
*	[glyph: small ornament, apparently the epact-30 mark [?]]	d	Kal.	1
	xxix	e	vi	2
	xxviii	f	v	3
	xxvii	g	iiii	4

Mark	Cyclus Epact.	Litt. dom.	Roman day	D a y
	xxvi	A	iii	5
	xxv	b	Pr.Non.	6
	xxiiii	c	Non.	7
	xxiii	d	viii	8
	xxii	e	vii	9
	xxi	f	vi	1 0
	xx	g	v	1 1
	xix	A	iiii	1 2
	xviii	b	iii	1 3
	xvii	c	Prid. Id.	1 4
	xvi	d	Idib.	1 5
	xv	e	xvii	1 6
	xiiii	f	xvi	1 7
	xiii	g	xv	1 8
	xii	A	xiiii	1 9
	xi	b	xiii	2 0
	x	c	xii	2 1
	ix	d	xi	2 2
	viii	e	x	2

Mark	Cyclus Epact.	Litt. dom.	Roman day	D a y
				3
	vii	f	ix	2
				4
	vi	g	viii	2
				5
	v	A	vii	2
				6
	iiii	b	vi	2
				7
	iii	c	v	2
				8
	ii	d	iiii	2
				9
*	i	e	iii	3
				0
[glyph: small ornament [?]]	xxix	f	Pr. Kal.	3
				1

Cyclus Epact. [Cycle of the Epacts]

The perpetual calendar continues with the second quarter of the year: three month blocks set side by side, each with the same five columns — the marker column, the *Cyclus Epact.* (cycle of the epacts), the dominical letter, the Roman-style day designation, and the day-number.

Aprilis. [April]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxviii	g	Kal.	1
	xxvii	A	iiii	2
	xxvi	b	iii	3
	xxv	c	Pr. Non.	4
	xxiiii	d	Non.	5
	xxiii	e	viii	6

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxii	f	vii	7
	xxi	g	vi	8
	xx	A	v	9
	xix	b	iiii	10
	xviii	c	iii	11
	xvii	d	Prid. Id.	12
	xvi	e	Idib.	13
	xv	f	xviii	14
	xiiii	g	xvii	15
	xiii	A	xvi	16
	xii	b	xv	17
	xi	c	xiiii	18
	x	d	xiii	19
	ix	e	xii	20
	viii	f	xi	21
	vii	g	x	22
	vi	A	ix	23
	v	b	viii	24
	iiii	c	vii	25
	iii	d	vi	26
	ii	e	v	27
	i	f	iiii	28
*	ω	g	iii	29
	xxix	A	Pr. Kal.	30

Caption beneath the block: *Cyclus Epact.*

Maius. [May]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxviii	b	Kal.	1
	xxvii	c	vi	2
	xxvi	d	v	3

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxv	e	iiii	4
	xxiiii	f	iii	5
	xxiii	g	Pr. Non.	6
	xxii	A	Non.	7
	xxi	b	viii	8
	xx	c	vii	9
	xix	d	vi	10
	xviii	e	v	11
	xvii	f	iiii	12
	xvi	g	iii	13
	xv	A	Prid. Id.	14
	xiiii	b	Idib.	15
	xiii	c	xvii	16
	xii	d	xvi	17
	xi	e	xv	18
	x	f	xiiii	19
	ix	g	xiii	20
	viii	A	xii	21
	vii	b	xi	22
	vi	c	x	23
	v	d	ix	24
	iiii	e	viii	25
	iii	f	vii	26
	ii	g	vi	27
*	i	A	v	28
ω	xxix	b	iiii	29
	xxviii	c	iii	30
	xxvii	d	Pr. Kal.	31

Caption beneath the block: *Cyclus Epact.*

Iunius. [June]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxvi	e	Kal.	1
	xxv	f	iiii	2
	xxiiii	g	iii	3
	xxiii	A	Pr. Non.	4
	xxii	b	Non.	5
	xxi	c	viii	6
	xx	d	vii	7
	xix	e	vi	8
	xviii	f	v	9
	xvii	g	iiii	10
	xvi	A	iii	11
	xv	b	Prid. Id.	12
	xiiii	c	Idib.	13
	xiii	d	xviii	14
	xii	e	xvii	15
	xi	f	xvi	16
	x	g	xv	17
	ix	A	xiiii	18
	viii	b	xiii	19
	vii	c	xii	20
	vi	d	xi	21
	v	e	x	22
	iiii	f	ix	23
	iii	g	viii	24
	ii	A	vii	25
	i	b	vi	26
*	ω	c	v	27
	xxix	d	iiii	28
	xxviii	e	iii	29
	xxvii	f	Pr. Kal.	30

Caption beneath the block: *Cyclus Epact.*

Iulius. [July]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxvi	g	Cal.	1
	xxv	A	vi	2
	xxiiii	b	v	3
	xxiii	c	iiii	4
	xxii	d	iii	5
	xxi	e	Pr. Nõ.	6
	xx	f	Non.	7
	xix	g	viii	8
	xviii	A	vii	9
	xvii	b	vi	10
	xvi	c	v	11
	xv	d	iiii	12
	xiiii	e	iii	13
	xiii	f	Pri. Id.	14
	xii	g	Idib.	15
	xi	A	xvii	16
	x	b	xvi	17
	ix	c	xv	18
	viii	d	xiiii	19
	vii	e	xiii	20
	vi	f	xii	21
	v	g	xi	22
	iiii	A	x	23
	iii	b	ix	24
	ii	c	viii	25
*	j	d	vii	26
ω	xxix	e	vi	27
	xxviii	f	v	28
	xxvii	g	iiii	29
	xxvi	A	iii	30

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxv	b	Pr. Kal.	31

Caption beneath the block: *Cyclus Epact.*

Augustus. [August]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxiiii	c	Cal.	1
	xxiii	d	iiij	2
	xxii	e	iiij	3
	xxi	f	Pr. Nō.	4
	xx	g	Non.	5
	xix	A	viiij	6
	xviii	b	vij	7
	xvii	c	vj	8
	xvi	d	v	9
	xv	e	iiij	10
	xiiii	f	iiij	11
	xiii	g	Pri. Id.	12
	xii	A	Idib.	13
	xi	b	xix	14
	x	c	xviiij	15
	ix	d	xviij	16
	viii	e	xvj	17
	vii	f	xv	18
	vi	g	xiiiij	19
	v	A	xiiij	20
	iiii	b	xij	21
	iii	c	xj	22
	ii	d	x	23
	i	e	ix	24
*	ω	f	viiij	25
	xxix	g	vij	26

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxviii	A	vj	27
	xxvii	b	v	28
	xxvi	c	iiij	29
	xxv	d	iiij	30
	xxiiii	e	Pr. Kal.	31

Caption beneath the block: *Cyclus Epact.*

September. [September]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxiiij	f	Cal.	1
	xxij	g	iiij	2
	xxj	A	iiij	3
	xx	b	Pr. Nō	4
	xix	c	Non.	5
	xviiij	d	viiij	6
	xvij	e	vij	7
	xvj	f	vj	8
	xv	g	v	9
	xiiiij	A	iiij	10
	xiiij	b	iiij	11
	xij	c	Pri. Id.	12
	xj	d	Idib.	13
	x	e	xviiij	14
	ix	f	xvij	15
	viiij	g	xvj	16
	vij	A	xv	17
	vj	b	xiiiij	18
	v	c	xiiij	19
	iiij	d	xij	20
	iiij	e	xj	21
	ij	f	x	22

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
*	j	g	ix	23
ω	xxix	A	viiij	24
	xxviiij	b	vij	25
	xxvij	c	vj	26
	xxvj	d	v	27
	xxv	e	iiij	28
	xxiiij	f	iiij	29
	xxiij	g	Pr. Kal.	30

Caption beneath the block: *Cyclus Epact.*

October. [October]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxii	A	Cal.	1
	xxi	b	vi	2
	xx	c	v	3
	xix	d	iiii	4
	xviii	e	iii	5
	xvii	f	Pr. Nō.	6
	xvi	g	Non.	7
	xv	A	viii	8
	xiiii	b	vii	9
	xiii	c	vi	10
	xii	d	v	11
	xi	e	iiii	12
	x	f	iii	13
	ix	g	Pri. Id.	14
	viii	A	Idib.	15
	vii	b	xvii	16
	vi	c	xvi	17
	v	d	xv	18
	iiii	e	xiiii	19

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
*	iii	f	xiii	20
	ii	g	xii	21
	j	A	xi	22
	ω	b	x	23
	xxix	c	ix	24
	xxviii	d	viii	25
	xxvii	e	vii	26
	xxvi	f	vi	27
	xxv	g	v	28
	xxiiii	A	iiii	29
	xxiii	b	iii	30
	xxii	c	Pr. Kal.	31

Caption beneath the block: *Cyclus Epact.*

Nouember. [November]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xxj	d	Cal.	1
	xx	e	iiij	2
	xix	f	iiij	3
	xviiij	g	Pr. Nõ.	4
	xviij	A	Non.	5
	xvj	b	viiij	6
	xv	c	vij	7
	xiiiij	d	vj	8
	xiiij	e	v	9
	xij	f	iiij	10
	xj	g	iiij	11
	x	A	Pri. Id.	12
	ix	b	Idib.	13
	viiij	c	xviiij	14
	vij	d	xviij	15

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	vj	e	xvj	16
	v	f	xv	17
	iiij	g	xiiij	18
	iiij	A	xiiij	19
	ij	b	xij	20
*	j	c	xj	21
ω	xxix	d	x	22
	xxviiij	e	ix	23
	xxvij	f	viiij	24
	xxvj	g	vij	25
	xxv	A	vj	26
	xxiiij	b	v	27
	xxiiij	c	iiij	28
	xxij	d	iiij	29
	xxj	e	Pr. Kal.	30

Caption beneath the block: *Cyclus Epact.*

December. [December]

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	xx	f	Cal.	1
	xix	g	iiij	2
	xviii	A	iiij	3
	xvii	b	Pr. Nō.	4
	xvi	c	Non.	5
	xv	d	viiij	6
	xiiii	e	vij	7
	xiii	f	vj	8
	xii	g	v	9
	xi	A	iiij	10
	x	b	iiij	11
	ix	c	Pri. Id.	12

Mark	Cyclus Epact.	Litt. dom.	Roman day	Day
	viii	d	Idib.	13
	vii	e	xix	14
	vi	f	xviii	15
	v	g	xvii	16
	iiii	A	xvi	17
	iii	b	xv	18
	ii	c	xiiii [?]	19
	i	d	xiii [?]	20
*	ω	e	xii	21
	xxix	f	xi	22
	xxviii	g	x	23
	xxvii	A	ix	24
	xxvi	b	viii	25
	xxv	c	vii	26
	xxiiii	d	vi	27
	xxiii	e	v	28
	xxii	f	iiii	29
	xxi	g	iii	30
19	xx	A	Pr. Kal.	31

Caption beneath the block: *Cyclus Epact.*

Note printed beneath the three blocks:

When the golden number is 19 and the epact is likewise 19, the new moon of December is completed on the last day of that same month. But when the golden number is any other, while the epact is still that same 19, the new moon will fall on the first day of January.

To make the equation we spoke of easier to apply, he drew up a table of the cycle of the epacts [cyclus epactarum], expanded to thirty lines, and prefixed to them the same number of letters of the alphabet. Above it he set the golden numbers, so arranged that the number 3 — which used formerly to be fitted to the Kalends of January — corresponds exactly to the letter ω, which in this Cycle is assigned to those same Kalends. He also published a small table serving both the equations of the solar year and those of the lunar year taken together with the solar. In it a B,

set on the right-hand side beside the year that is to receive the solar equation, shows the year to be intercalary when it is present, and common when it is absent; the remaining letters serve the equation of the lunar year together with the solar. That equation, moreover, is of more than one kind. One is owed every 300 years, as we said. Another falls at every 2,400, since one day is not owed exactly every 300 years: twelve years and six months are still wanting, and in 2,400 years these make up nearly a third of a day and so carry the equation over into the following hundredth year. Another arises from an intercalation left out which otherwise would have had to be made; for it will sometimes happen that a day which had to be intercalated on the score of one equation is dropped on the score of another. So that these should not stand in the way of obtaining the new moons from this cycle for all time to come, it will have to be noted (*the sentence resumes below the table*) —

Tabula Epactarum expansa Aloysii Lilij, cum tabella æquationis earundem epactarum.

The expanded Table of the Epacts of Luigi Lilio, with the little table of the equation of those same epacts.

[Margin (vertical, left of the table): Letters designating the lines of the epacts, which serve at different periods.]

Aur. num. [Golden number]	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																		
→	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	1	2
P	ω	1	2	3	1	2	6	1	2	9	2	1	1	2	4	1	2	8	1
		1	2		4	5		7	8		0		2	3		5	6		9
N	2	1	2	2	1	2	5	1	2	8	1	*	1	2	3	1	2	7	1
	9	0	1		3	4		6	7		9		1	2		4	5		8
M	2	9	2	1	1	2	4	1	2	7	1	2	1	2	2	1	2	6	1
	8		0		2	3		5	6		8	9	0	1		3	4		7
H	2	8	1	ω	1	2	3	1	2	6	1	2	9	2	1	1	2	5	1
	7		9		1	2		4	5		7	8		0		2	3		6
G	2	7	1	2	1	2	2	1	2	5	1	2	8	1	*	1	2	4	1
	6		8	9	0	1		3	4		6	7		9		1	2		5
F	2	6	1	2	9	2	1	1	2	4	1	2	7	1	2	1	2	3	1
	5		7	8		0		2	3		5	6		8	9	0	1		4
E	2	5	1	2	8	1	ω	1	2	3	1	2	6	1	2	9	2	2	1
	4		6	7		9		1	2		4	5		7	8		0		3

Aur. num. [Golden number]	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																		
→	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	1	2
D	2	4	1	2	7	1	2	1	2	2	1	2	5	1	2	8	1	1	1
	3		5	6		8	9	0	1		3	4		6	7		9		2
C	2	3	1	2	6	1	2	9	2	1	1	2	4	1	2	7	1	ω	1
	2		4	5		7	8		0		2	3		5	6		8		1
B	2	2	1	2	5	1	2	8	1	*	1	2	3	1	2	6	1	2	1
	1		3	4		6	7		9		1	2		4	5		7	9	0
A	2	1	1	2	4	1	2	7	1	2	1	2	2	1	2	5	1	2	9
	0		2	3		5	6		8	9	0	1		3	4		6	8	
u	1	ω	1	2	3	1	2	6	1	2	9	2	1	1	2	4	1	2	8
	9		1	2		4	5		7	8		0		2	3		5	7	
t	1	2	1	2	2	1	2	5	1	2	8	1	*	1	2	3	1	2	7
	8	9	0	1		3	4		6	7		9		1	2		4	6	
s	1	2	9	2	1	1	2	4	1	2	7	1	2	1	2	2	1	2	6
	7	8		0		2	3		5	6		8	9	0	1		3	5	
r	1	2	8	1	ω	1	2	3	1	2	6	1	2	9	2	1	1	2	5
	6	7		9		1	2		4	5		7	8		0		2	4	
q	1	2	7	1	2	1	2	2	1	2	5	1	2	8	1	*	1	2	4
	5	6		8	9	0	1		3	4		6	7		9		1	3	
p	1	2	6	1	2	9	2	1	1	2	4	1	2	7	1	2	1	2	3
	4	5		7	8		0		2	3		5	6		8	9	0	2	
n	1	2	5	1	2	8	1	ω	1	2	3	1	2	6	1	2	9	2	2
	3	4		6	7		9		1	2		4	5		7	8		1	
m	1	2	4	1	2	7	1	2	1	2	2	1	2	5	1	2	8	2	1
	2	3		5	6		8	9	0	1		3	4		6	7		0	
l	1	2	3	1	2	6	1	2	9	2	1	1	2	4	1	2	7	1	ω
	1	2		4	5		7	8		0		2	3		5	6		9	
k	1	2	2	1	2	5	1	2	8	1	*	1	2	3	1	2	6	1	2
	0	1		3	4		6	7		9		1	2		4	5		8	9
i	9	2	1	1	2	4	1	2	7	1	2	1	2	2	1	2	5	1	2
		0		2	3		5	6		8	9	0	1		3	4		7	8
h	8	1	ω	1	2	3	1	2	6	1	2	9	2	1	1	2	4	1	2
		9		1	2		4	5		7	8		0		2	3		6	7
g	7	1	2	1	2	2	1	2	5	1	2	8	1	*	1	2	3	1	2

Aur. num. [Golden number]	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																		
→	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	1	2
		8	9	0	1		3	4		6	7		9		1	2		5	6
f	6	1	2	9	2	1	1	2	4	1	2	7	1	2	1	2	2	1	2
		7	8		0		2	3		5	6		8	9	0	1		4	5
e	5	1	2	8	1	ω	1	2	3	1	2	6	1	2	9	2	1	1	2
		6	7		9		1	2		4	5		7	8		0		3	4
d	4	1	2	7	1	2	1	2	2	1	2	5	1	2	8	1	*	1	2
		5	6		8	9	0	1		3	4		6	7		9		2	3
c	3	1	2	6	1	2	9	2	1	1	2	4	1	2	7	1	2	1	2
		4	5		7	8		0		2	3		5	6		8	9	1	2
b	2	1	2	5	1	2	8	1	*	1	2	3	1	2	6	1	2	1	2
		3	4		6	7		9		1	2		4	5		7	8	0	1
a	1	1	2	4	1	2	7	1	2	1	2	2	1	2	5	1	2	9	2
		2	3		5	6		8	9	0	1		3	4		6	7		0

(the sentence broken off above resumes) — that the letters prefixed to the expanded table change upward, and the epact number increases, when the equation falls in a centesimal intercalary year; but downward, and the epact number decreases, when the day that was to have been intercalated in the centesimal year is not intercalated. When, however, nothing is subtracted either from the current year or from the lunar year, or when the subtraction falls in that centesimal year in which the lunar year was in need of its equation, one stays on the same letter and the same epact. These tables we append here, and also the others which the author of this book calls tables of the periods, in which are set out the epacts that indicate the new moons for each single year.

The use of these tables is as follows. For the year proposed, the golden number must first be sought from the ordinary table; then, in the little table of the equation, one must see what letter is marked opposite the number of that year, or of the next lower one, and the like letter and the golden number must be looked for in the table of the Epacts; for opposite the two of them will be found the epact numbers, or the signs, which throughout that whole year will show the new moons in the Calendar.

An example set beside it will make this clear. I want to know which number, or which sign, among those placed in the cycle of the Epacts, indicates the new moons in the year 1720. First of all, then, I find from the ordinary table that the golden number of that year is 11; this I note in the upper line of the expanded

table of the Epacts, in which the golden number is written out. Next I look for that same year in the little table of the equation; and since I do not find it expressly, I take the next lower, that is, 1700, beside which stands the capital letter D. I therefore look for the like letter in the first column of that same table of the Epacts, and having found it I move across to the right from it until I come to the column of the number 11 noted before; and I see the number 21 written in the corner common to both. Wherever, then, that number is found in the cycle of the Epacts in that year, it will show the day of the new moon.

Sequuntur tabellæ temporum pro Epactarum vsu. — **There follow the tables of the periods for the use of the Epacts.**

Left-hand marginal table. [Margin (vertical title): Table of the equation of the Epacts, if ten intercalations should have been omitted over forty years.]

[line-letter]	Anni Christi [Years of Christ]	B
N	1	
P	325	
a	600	B
b	900	B
c	1200	B
d	1500	B
c [?]	1584	
b	1588	
a	1592	
P	1596	
N	1600	
M	1604	
H	1608	
G	1612	
F	1616	
E	1620	
D	1700	
D	1800	
C	1900	
C	2000	B

[line-letter]	Anni Christi [Years of Christ]	B
C	2100	
B	2200	
A	2300	
A	2400	B
A	2500	
u	2600	
t	2700	
u	2800	B
t	2900	
s	3000	
s	3100	
s	3200	B
r	3300	
r	3400	
q	3500	
q	3600	B
q	3700	
p	3800	
n	3900	
p	4000	B
n	4100	
m	4200	
m	4300	

Right-hand marginal table. [Margin (vertical title): Table of the equation of the Epacts, if ten days are removed all at once in the year 1582.]

[line-letter]	Anni Christi [Years of Christ]	B
N	1	
P	325	
a	600	B
b	900	B

[line-letter]	Anni Christi [Years of Christ]	B
c	1200	B
d	1500	B
E	1582	
E	1600	
D	1700	
D	1800	
C	1900	
C	2000	B
C	2100	
B	2200	
A	2300	
A	2400	B
A	2500	
u	2600	
t	2700	
u	2800	B
t	2900	
s	3000	
s	3100	
s	3200	B
r	3300	
r	3400	
q	3500	
q	3600	B
q	3700	
p	3800	
n	3900	
p	4000	B
n	4100	
m	4200	
m	4300	

[line-letter]	Anni Christi [Years of Christ]	B
m	4400	B
l	4500	
l	4600	
k	4700	
k	4800	B
i	4900	
i	5000	

TABELLÆ TEMPORVM PRO EPACTARVM VSV.

TABLES OF THE PERIODS FOR THE USE OF THE EPACTS.

Ab anno Domini M. D. vsque ad eum annum, cui decem dies eximentur, vt æquinoctium in pristinum locum redeat, huius Tabellæ Epactæ nouilunia indicabunt. — **From the year of the Lord 1500 up to that year from which the ten days will be removed, so that the equinox may return to its former place, the Epacts of this Table will indicate the new moons.**

	1										1	1	1	1	1	1	1	1	1
Aur. Num.	9	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
Epactæ	*	1	2	4	1	2	7	1	2	1	2	2	1	2	5	1	2	8	1
		2	3		5	6		8	9	0	1		3	4		6	7		9

Ab eo anno, cui decem illi dies exempti fuerint, vsque ad annum 1699. sequentis tabulæ Epactæ nouilunia ostendent. — **From the year in which those ten days shall have been removed, up to the year 1699, the Epacts of the following table will show the new moons.**

					1	1	1	1	1	1	1	1	1						
Aur. Num.	6	7	8	9	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5
Epactæ	2	8	1	ω	1	2	3	1	2	6	1	2	9	2	2	1	2	5	1
	7		9		1	2		4	5		7	8		0		3	4		6

Epactæ ad inueniendum nouilunia ab anno Domini 1700. ad annum 1899. — **Epacts for finding the new moons from the year of the Lord 1700 to the year 1899.**

	1	1	1	1	1	1	1	1	1	1									
Aur. Num.	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
Epactæ	1	2	2	1	2	5	1	2	8	1	1	1	2	4	1	2	7	1	2
	0	1		3	4		6	7		9		2	3		5	6		8	9

Numeri Epactarum nouilunia indicantes ab anno Domini 1900. vsque ad annum 2199. — Epact numbers indicating the new moons from the year of the Lord 1900 up to the year 2199.

											1	1	1	1	1	1	1	1	1
Aur. Num.	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
Epactæ	ω	1	2	3	1	2	6	1	2	9	2	1	1	2	4	1	2	7	1
		1	2		4	5		7	8		0		2	3		5	6		8

In the first table of the periods, the golden number 19 and the epact * serve the year of the Lord 1500; but 1 and 12 the year 1501, and so on in turn, these cycles always recurring upon themselves. Let the same be understood of the rest.

Lilius further completed a wholly finished table for finding the lawful days of Easter and of the movable feasts, as they are called, since those hitherto in common use are not free from uncertainty. He adds several other things bearing on a fuller explanation and proof of this scheme of his own devising, but which do not seem necessary to mention now.

Once, therefore, the vernal equinox has been restored to the place from which it had slipped; once this Cycle of the Epacts — which can be accommodated to any length of the year whatever — has been attached to the Calendar; and once the method of intercalation we have described, together with the equation of that Cycle, has been applied, the years and the months will hereafter agree with the reckoning of the sun and the moon so exactly that no variation or discrepancy can thereafter arise. And should it ever happen, he shows that it can be restored to its proper state most handsomely by this same route. Thus far the author himself.

But if the Alphonsine calculations should seem to anyone too uncertain to be trusted, and he judges that the more recent ones should be followed instead, he will assuredly see that the arrangement and ordering of this ingenious Cycle and of the table of the Epacts devised by Lilius is such that it can be fitted without any trouble to the calculations of Copernicus, or of anyone else, if a table of the equation drawn up from them is substituted for the one we have written in the margin: as for instance

— as, for example, this one, which we have set down by way of illustration and which does not differ much from Copernicus's reckoning.

Come then, you mathematicians, who are drawn on by the contemplation and study of the heavens: throw yourselves wholeheartedly and with every care into this common cause. Weigh the matter diligently, and then either approve what Lilius here proposes, or, if you know anything sounder than these proposals, be so good as to share it openly and communicate it to us. It will be a disgrace to us all if every Christian is left any longer to suffer under a serious error and to remain in ignorance of matters of the first importance.

We shall therefore await the judgments of the princes and of your learned men; and whichever scheme appears more fitting and more suitable to the greater part of them, that one the Supreme Pontiff himself will approve and adopt, as representing something like the consensus of the whole Christian world.

FINIS.

[Left-hand table, p. 12]

Vertical caption: **Table for the equation of the epacts, if ten intercalations should have been omitted over forty years.**

[Margin: Gregory XIII proposed to himself to follow the consensus of the whole Christian world in this business of the correction.]

Anni Christi (Years of Christ)	
c	1584
b	1588
a	1592
P	1596
N	1600
M	1604
H	1608
G	1612
F	1616
E	1620
E	1700
E	1800

B

Anni Christi (Years of Christ)		
E	1900	B
D	2000	
E	2100	B
D	2200	
C	2300	
B	2400	
B	2500	
A	2600	
u	2700	
u	2800	
t	2900	
t	3000	B
t	3100	
t	3200	B
s	3300	
t	3400	B
s	3500	
s	3600	B
s	3700	
r	3800	
q	3900	
q	4000	
P	4100	
n	4200	
n	4300	
m	4400	
l	4500	
l	4600	
l	4700	B
K	4800	
K	4900	B

Anni Christi (Years of Christ)

K 5000

[Right-hand table, p. 12]

Vertical caption: **Table for the equation of the epacts, if ten days should be removed all at once in the year 1582.**

Anni Christi (Years of Christ)

E	1582	
E	1600	B
E	1700	B
E	1800	
E	1900	B
D	2000	
E	2100	B
D	2200	
C	2300	
B	2400	
B	2500	
A	2600	
u	2700	
u	2800	
t	2900	
t	3000	B
t	3100	
t	3200	B
s	3300	
t	3400	B
s	3500	
s	3600	B
s	3700	
r	3800	
q	3900	

Anni Christi (Years of Christ)		
q	4000	
P	4100	
n	4200	
n	4300	
m	4400	
l	4500	
l	4600	
l	4700	B
k	4800	
k	4900	B
k	5000	

CALENDARIVM GREGORIANVM PERPETVVM.

Set before the whole Christian world by GREGORY XIII, Supreme Pontiff. In the year M. D. LXXXII.

GREGORIVS EPISCOPVS SERVVS SERVORVM DEI

AD PERPETVAM REI MEMORIAM.

[The bull Inter gravissimas, printed throughout in italic.]**

Among the weightiest cares of our pastoral office, not the least is this: that whatever the sacred Council of Trent reserved to the Apostolic See should be brought, with God's help, to the desired conclusion. The Fathers of that same Council did indeed take up the care of the Breviary along with the rest of their deliberations, but, cut short by time, they referred the whole matter, by decree of the Council itself, to the authority and judgment of the Roman Pontiff. Now the Breviary contains two chief things: one comprises the prayers and divine praises to be recited on feast days and ordinary days alike; the other concerns the annual return of Easter and of the feasts that depend on it, to be measured by the motion of the Sun and the Moon. The first of these our predecessor Pius V, of happy memory, saw completed and published. The second, which of course requires a proper restoration of the Calendar, has long been attempted, and often, by the Roman Pontiffs our predecessors; but it could not be completed and carried

through to its end down to the present time. The reason was that the schemes for correcting the Calendar put forward by those skilled in the celestial motions were neither perpetual, nor did they keep the ancient ecclesiastical usages intact — which was the very first thing that had to be safeguarded in this matter — because of the great and almost insoluble difficulties that such a correction has always involved.

While we too, then, relying on the dispensation entrusted to us by God, unworthy though we are, were occupied with this thought and care, a book was brought to us by our beloved son Antonio Lilio, doctor of arts and of medicine, which his own brother Luigi Lilio had written some time before. In it he shows, by means of a certain new Cycle of the Epacts which he had devised — one governed by a fixed rule of the golden number itself, and adaptable to any length whatever of the solar year — that everything which has fallen into disorder in the Calendar can be restored on a consistent principle, and restored so as to last for all ages, in such a way that the Calendar itself appears never to be liable to any change in the future. This new method of restoring the Calendar, contained in a slim volume, we sent a few years ago to the Christian princes and to the more celebrated universities, so that a matter which belongs to all might also be brought to completion by the common counsel of all. When they had replied in agreement, and just as we most desired, we were moved by the consent of them all to employ upon the correction of the Calendar men most expert in these matters here in the sacred City — men whom we had long before chosen from the leading nations of the Christian world. When they had devoted much time and diligence to that labour, and had compared with one another the cycles both of the ancients and of more recent writers, gathered from every quarter and most carefully weighed, they chose, on their own judgment and on that of the learned men who have written on the subject, this Cycle of the Epacts in preference to all others; and they added to it a number of things which, after careful consideration, seemed to bear most closely on the perfecting of the Calendar.

We therefore considered that, for the right celebration of the feast of Easter according to the enactments of the holy Fathers and of the ancient Roman Pontiffs — especially the first Pius and Victor — and of that great ecumenical Council of Nicaea, and of others, three things must necessarily be brought together and settled: first, a fixed seat for the vernal equinox; next, the right placing of the fourteenth day of the moon of the first month, which falls either on the day of the equinox itself or immediately after it; and last, the first Sunday that follows that same fourteenth day of the moon. We have accordingly taken care not only that the vernal equinox be restored to its original seat, from which it has

by now drifted about ten days since the Council of Nicaea, and that the Paschal fourteenth day of the moon be put back in its place, from which at present it is four days and more distant, but also that a way and a method be handed down whereby it is provided that in future the equinox and the fourteenth day of the moon shall never be shifted from their proper seats.

In order, therefore, that the vernal equinox — which was fixed by the Fathers of the Council of Nicaea at the twelfth day before the Kalends of April — may be restored to that same seat, we order and command that in the month of October of the year 1582 ten days be removed, inclusively, from the third day before the Nones up to the day before the Ides; and that the day which follows the feast of St Francis, customarily celebrated on the fourth day before the Nones, be called the Ides of October, and that on it be celebrated the feast of the holy martyrs Dionysius, Rusticus, and Eleutherius, with the commemoration of St Mark, pope and confessor, and of the holy martyrs Sergius, Bacchus, Marcellus, and Apuleius. On the seventeenth day before the Kalends of November, which follows immediately, let the feast of St Callistus, pope and martyr, be celebrated. Then on the sixteenth day before the Kalends of November let the office and Mass be those of the eighteenth Sunday after Pentecost, the dominical letter being changed from G to C. Finally, on the fifteenth day before the Kalends of November let the feast of St Luke the Evangelist be kept, and from it let the remaining feast days follow in order, as they are set out in the Calendar.

But so that this subtraction of ten days by us may work no prejudice to anyone in the matter of yearly or monthly payments, it shall be the duty of judges, in any disputes that arise over this, to take account of the said subtraction by adding another ten days at the end of each term of payment.

Next, so that in future the equinox may not recede from the twelfth day before the Kalends of April, we decree that the bissextile day must continue to be kept every fourth year, as is the custom — except in the centesimal years. Although these have hitherto always been bissextile, and we wish the year 1600 to be so as well, the centesimal years that follow after it shall not all be bissextile: rather, in every four hundred years the first three centesimal years shall pass without a bissextile, while every fourth centesimal year shall be bissextile, so that the years 1700, 1800, and 1900 shall not be bissextile. But in the year 2000 the bissextile day shall be intercalated in the customary way, February having 29 days; and this same order of omitting and intercalating the bissextile day in every four hundred years shall be preserved perpetually.

Likewise, so that the Paschal fourteenth day of the moon may be rightly found, and so that the days of the moon may be truly set before the faithful people according to the ancient usage of the Church, to be learned each day from the Martyrology, we decree that the golden number be removed from the Calendar and that the Cycle of the Epacts be substituted in its place. This Cycle, governed (as we have said) by a fixed rule of the golden number, brings it about that the new moon and the Paschal fourteenth day of the moon always keep their true places. This is plainly evident from our exposition of the Calendar, in which the Paschal tables are also set out according to the ancient rite of the Church, so that the most holy feast of Easter may be found more surely and more easily.

Finally, since the Cycle of the dominical letters of 28 years, in use in the Roman Church down to this day, must necessarily be broken — partly on account of the ten days removed from the month of October of the year 1582 (which may rightly be called the year of the correction), and partly on account of the three days that are not to be intercalated in the space of every four hundred years — we wish that in its place there be substituted the same Cycle of 28 years, adapted by the same Lilius both to the aforesaid rule for intercalating the bissextile in the centesimal years and to any length whatever of the solar year; from which the dominical letter can be found in perpetuity, by the help of the solar cycle, just as easily as before, as is explained in its own canon.

We therefore, that we may carry out what is proper to the Supreme Pontiff, approve by this our decree the Calendar, now corrected and completed through God's boundless kindness towards his Church, and we have ordered it to be printed at Rome together with the Martyrology, and, once printed, to be published abroad. And so that both may everywhere on earth be preserved uncorrupted and purged of blemishes and errors, we forbid all printers living in territory subject, mediately or immediately, to us and to the holy Roman Church — under penalty of the loss of the books and of a hundred gold ducats, forfeited ipso facto to the Apostolic Chamber — and all others residing in any part of the world whatever, under penalty of excommunication *latae sententiae* and other penalties at our discretion, to dare or presume in any way to print, to offer for sale, or to accept the Calendar or the Martyrology, whether together or separately, without our licence.

Moreover we abolish and wholly annul the old Calendar; and we wish that all patriarchs, primates, archbishops, bishops, abbots, and the other heads of churches introduce the new Calendar (to which the plan of the Martyrology has likewise been adapted) for the recitation of the divine offices and the celebration

of the feasts, each into his own churches, monasteries, convents, orders, military orders, and dioceses, and that they alone use it — they themselves, and likewise all other priests, and clerics both secular and regular of either sex, and soldiers too, and all the faithful of Christ. Its use will begin after those ten days removed from the month of October in the year 1582. But those who inhabit regions so remote that they cannot have notice of these letters before the time prescribed by us shall be permitted to make this change in the manner just now laid down by us in that same month of October of the following year, 1583, or of another year — that is, as soon as these our letters shall have reached them — as will be explained more fully in our Calendar of the year of the correction.

And by the authority given to us by the Lord, we exhort and entreat our most dear son in Christ, Rudolf, illustrious King of the Romans [recte: *Romanorum*; the page prints *Romanorem*], elected Emperor, and the other kings, princes, and republics, and we charge them, that with the same zeal with which they have pressed us ...

might bring so distinguished a work to completion, so now, with the same zeal — indeed with even greater — for preserving concord among the Christian nations in the celebration of the feasts, they too should adopt this Calendar of ours, and see to it that it is devoutly received and inviolably observed by all the peoples subject to them.

But since it would be difficult to convey the present letters to every place in the Christian world, we direct that they be published and posted on the doors of the Basilica of the Prince of the Apostles and of the Apostolic Chancery, and in the open space of the Campo dei Fiori; and we further direct that copies of these same letters — printed copies included, and copies inserted into or prefixed to volumes of the Calendar and the Martyrology, whether subscribed by the hand of a public notary or sealed with the seal of a person constituted in ecclesiastical dignity — shall everywhere, among all nations and in all places, be held to carry exactly the same unquestioned authority that the originals themselves would carry if produced. Therefore let no one whatever be permitted to infringe this page of our precepts, mandates, statutes, will, approbation, prohibition, revocation, abolition, exhortation, and request, or to oppose it with reckless daring. Anyone who presumes to attempt this should know that he will incur the anger of Almighty God and of his blessed Apostles Peter and Paul.

Given at Tusculum, in the year of the Lord's Incarnation 1581 [M. D. LXXXI.], on the sixth day before the Kalends of March, in the tenth year of our Pontificate.

Cae. Glorierius. A. de Alexijs.

In the year from the Nativity of our Lord Jesus Christ 1582, in the tenth indiction, on Thursday the first day of the month of March, in the tenth year of the Pontificate of the most holy Father in Christ and our Lord Gregory XIII, Pope by divine providence: the Apostolic letters transcribed above were published and posted on the doors of the Prince of the Apostles in the City and of the Apostolic Chancery, and in the open space of the Campo dei Fiori, as is customary, by me, Scipio de Octavianis, Apostolic Courier.

Franciscus Baron, Master of the Couriers.

CANONS ON THE PERPETUAL GREGORIAN CALENDAR

[CANONES IN CALENDARIVM GREGORIANVM PERPETVVM.]

Canon I.

ON THE NINETEEN-YEAR CYCLE OF THE GOLDEN NUMBER

[DE CYCLO DECENNOVENNALI AVREI NVMERI.]

The nineteen-year cycle [cylus decennouennalis] of the golden number [numerus aureus] is a revolution of the number 19, running from 1 up to 19; once that revolution is completed, the count returns to unity. For example: in the year 1577 the number of the nineteen-year cycle, which is called the golden number, is 1. In the following year, 1578, it is 2, and so on in the succeeding years, always one greater, up to 19 — a golden number that will fall in the year 1595. After that one must return again to unity, so that in 1596 the golden number is once more 1, in 1597 it is 2, and so on. This cycle of the golden number contains 19 years because, after 19 solar years have elapsed, the new moons [nouilunia] return to the same days of the months — though not entirely exactly, but a small fraction of a day earlier, as the computists show, and as is shown in the book on the new method of restoring the Roman Calendar.

Every year of the golden number ends at the close of the month of December, and at the beginning of the following January another year of the golden number takes its start — just as happens with the years of the Lord, which always end in the month of December and take their beginning from January. Thus in the year of the Lord 1582 the year of the nineteen-year cycle, which is called the golden

number, is 6, and it ends together with that same year of the Lord 1582 in the month of December. In January another year of the Lord begins, namely 1583, and in that same month of January another year of the golden number is likewise taken up, namely 7. The same procedure is to be followed in the remaining years, until the number 19 is completed, from which one must again return to unity — and so on in perpetuity.

Down to the present day the Roman Church has used this nineteen-year cycle of the golden number, distributed through the days of the Calendar, both for finding the conjunctions of the Sun and Moon and — above all — for finding the feast day of Easter and tracking down the other movable feasts. The reason is that the ancients supposed that the new moons, once a span of 19 solar years had passed, returned to precisely the same day and the same hour. That is not true: as has been said, the new moons return to the same position a little sooner than the span of 19 solar years is completed. The result is that the new moons now stand more than four days away from the golden number in the old Roman Calendar, and that by that Calendar's rule Easter is very often celebrated after the twenty-first [xxj.] Moon, contrary to the institutions of our forefathers. So much so that this cycle of the golden number has by now been found altogether useless for indicating the new moons and the movable feasts, and it will grow more and more useless day by day for the future — both because of the ten days to be removed from the month of October of the year 1582, and also because of the three bissextiles to be omitted in every four hundred years — unless it were reduced into 30 series; that is, unless 30 Calendars were constructed, so that from among them one might always select the one that fits a given period. And everyone can see what disturbance and what expense that would entail, especially for churchmen.

To avoid this drawback, there has been substituted in the Calendar, in place of the golden number, the cycle of the epacts [Cyclus Epactarum], consisting of 30 epactal numbers. This is nothing else than the nineteen-year cycle of the golden number equated, so as to stand in place of the golden number distributed through the 30 Calendars just mentioned, as is explained in the book on the new method of restoring the Roman Calendar. The golden number, however, we shall still use hereafter — not indeed for finding the new moons and the movable feasts, as the Church has done down to this day, but only for investigating the epact of any given year, from which the new moons and the movable feasts are then to be found, as we shall teach in the following Canon. So that even now it is altogether necessary to track down the golden number for any year whatever,

even though it has been removed from the Calendar and no longer has a place in finding the new moons and the movable feasts.

THEREFORE, so that the golden number may be found for any year proposed, the following table of golden numbers has been drawn up. Its use begins with the year of the correction, 1582, inclusive, and it lasts in perpetuity. From it the golden number of any year after the year 1582 will be found in the following way.

Table of the cycle of the golden number, taking its start from the year of the correction 1582. [Tabella cycli Aurei numeri initium sumens ab anno correctionis 1582.]

[illegible]

Assign to the year 1582 the first number of the table, which is v_j ; assign the second, which is v_{ij} , to the following year, 1583; and so on without limit, until you reach the year whose golden number you are seeking, returning to the beginning of the table each time you have run through it. For the cell into which the proposed year falls will give the golden number sought.

BUT since it is very laborious and tiresome to count out so many years in that table, and to repeat it so many times until one reaches the year whose golden number is sought — especially if the proposed year is far distant from 1582 — we have constructed this other table that follows, from which the golden number of any year, whether before or after the year 1582, will be found without great labour, by the following technique.

Look for the proposed year in the table under "years of the Lord." If it is entered there, the golden number placed to its right, after unity has first been added (as the head of the table directs), will be the number sought. But if the proposed year is not contained in the table, take the next smaller year that the table does contain, together with its corresponding golden number. Then take, in the same table, the years that remain over, together with the corresponding golden number, and add that to the golden number found before, casting out 19 from the sum if 19 can be cast out. Finally add unity. For in this way the golden number of the proposed year will be made up. But if the years that remained over are likewise not found in the table, one must again take the next smaller year, together with its golden number, which is to be added to the golden number previously found, and 19 is to be cast out of the sum if it can be cast out. The same

is to be done with the remaining years that are left over, until you have found them all in the table. And finally, to the last golden number made up out of the golden numbers found in the table (19 having first been cast out, if it can be cast out, as has been said), unity is to be added. For in this way the golden number of the proposed year will be produced. And if after the addition of unity the resulting number is 19 — so that when 19 is subtracted nothing remains — the golden number will be 19.

Examples will make the matter clearer. Suppose the golden number of the year 700 is to be found. Since this year is found in the table, and the golden number 16 corresponds to it, then if 1 is added to that golden number, the golden number for the year 700 will be 17. Again, let the golden number for the year 1583 be proposed for finding. Since this year does not appear in the table, one must take the year 1000, the next smaller in the table, and its golden number 12. Next the remaining 583 years are to be taken in the table; and since they are not contained in it, one must again take the year 500, the next smaller in the table, and its golden number 6, which added to the golden number 12 found before makes 18. After this, the 83 years that remain are to be taken in the table; but since they are not found there, one must take the year 80, the next smaller in the table, and its golden number 4, which set beside the golden number 18 composed before yields 22 — and if 19 is subtracted from this, 3 will remain. Lastly the remaining 3 years are to be taken in the table, with the golden number 3 that corresponds to them; and when this is added to the golden number 3 just left over, the number 6 is composed. If 1 is finally added to this, as the head of the table directs, the golden number for the year 1583 will be 7. Suppose, finally, that the golden number of the year 1595 is sought. I first take the golden number 12 corresponding to the year 1000, and add it to the golden number 6 that corresponds to the year 500, making 18. Then I add the golden number 14 corresponding to the year 90 to that golden number 18 already found,

Table for finding the golden number of any year whatever. [Tabula ad Aureum numerum cuiuslibet anni inueniendum.]

Each pair of columns runs: years of the Lord | golden number, **Add 1** [*Adde 1*].

An. Dom ini	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)
1	1	300	15	5000 0	11	7000 000	1

An. Dom ini	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)
2	2	400	1	6000 0	17	8000 000	12
3	3	500	6	7000 0	4	9000 000	4
4	4	600	11	8000 0	10	1000 0000	15
5	5	700	16	9000 0	16	2000 0000	11
6	6	800	2	1000 00	3	3000 0000	7
7	7	900	7	2000 00	6	4000 0000	3
8	8	1000	12	3000 00	9	5000 0000	18
9	9	2000	5	4000 00	12	6000 0000	14
10	10	3000	17	5000 00	15	7000 0000	10
20	1	4000	10	6000 00	18	8000 0000	6
30	11	5000	3	7000 00	2	9000 0000	2
40	2	6000	15	8000 00	5	1000 0000 0	17
50	12	7000	8	9000 00	8	2000 0000 0	15
60	3	8000	1	1000 000	11	3000 0000 0	13
70	13	9000	13	2000 000	3	4000 0000	11

An. Dom ini	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)	Anni Domi ni	Aureus Num. (Adde 1)
						0	
80	4	1000 0	6	3000 000	14	5000 0000 0	9
90	14	2000 0	12	4000 000	6	6000 0000 0	7
100	5	3000 0	18	5000 000	17	7000 0000 0	5
200	10	4000 0	5	6000 000	9	8000 0000 0	3

and this produces the number 32; taking 19 away from it leaves 13. To this I add the golden number 5, which corresponds to the year 5, and so make 18. If I finally add 1 to that, I shall have 19 as the golden number of the year 1595.

One is always added to the last number because Christ was born in the second year of this golden-number cycle: in the year of the Lord 1 the golden number was 2, in year 2 it was 3, and so on.

The construction of this table is likewise perfectly straightforward. The first ten golden numbers correspond to the first 10 years. Then, since from 20 onward the table advances by tens of years, and the golden number 10 corresponds to the tenth year — so that every ten years the golden number increases by 10 units — the golden number 10 belonging to year 10 must be doubled, and 19 cast out of the resulting 20, to give the golden number 1 for the year 20. To that golden number 1 the golden number 10 of the tenth year must again be added, to compose the golden number 11 for the year 30. In this way, for the succeeding decades up to 100, the golden number 10 is always to be added to the preceding golden number, and 19 cast out if it can be cast out, so as to obtain the next golden number. After that, since in the table the progression beyond the year 100 runs by hundreds of years, and the golden number 5 corresponds to the year 100, the golden number 5 must be doubled to compose the golden number 10 for the year 200 — seeing that with every 100 years the golden number increases by five

units. To the golden number 10, again, the golden number 5 of the hundredth year must be added, to generate the golden number 15 for the year 300. And so, for the succeeding centuries up to the thousandth year, the golden number 5 is always to be added to the preceding golden number, and 19 cast out whenever it can be cast out, so that the next golden number emerges. By this method you can extend the table to any number of years you like, provided you observe by what interval of years the table advances and which golden number corresponds to the year at which the progression begins. Thus you see that from the year 1000 up to the year 10000 the golden number 12 is always added to the preceding golden number, and 19 discarded whenever it could be cast out; for the progression of years then begins from the year 1000 and proceeds by thousands up to the year 10000, and moreover the golden number 12 corresponds to the year 1000, and so forth.

Further, even without this table the golden number of any year can be found very easily by the rules of arithmetic, as follows. Add 1 to the proposed year of the Lord and divide the sum by 19. The remainder left by the division — no account being taken of the quotient, since that only shows how many revolutions of the golden number have been completed from Christ down to the proposed year — will be the golden number of the proposed year. If nothing remains from the division, the golden number will be 19. For example, suppose the golden number of the year 1584 is wanted. I add 1, divide the sum 1585 by 19, and find that 8 is left by the division; so the golden number for the year 1584 will be 8. Again, if the golden number is wanted for the year 1595: adding one gives 1596, which divided by 19 leaves nothing; the golden number in that case will therefore be 19. Likewise, if 1 is added to the year 1600, the number 1601 results, which divided by 19 leaves 5 as the golden number of the year 1600. And so for the rest.

Canon 2.

DE EPACTIS, ET NOVILUNIIS.

[On the epacts and the new moons.]

The epact is simply the number of days by which the common solar year of 365 days exceeds the common lunar year of 354 days. Thus the epact of the first year is 11, since by that number the common solar year exceeds the common lunar year, and consequently in the following year the new moons fall 11 days earlier than in the first. From this it follows that the epact of the second year is 22: for in that year the solar year again exceeds the lunar by 11 days, which added to the 11 days of the first year make 22, and accordingly, once that year is complete, the

new moons fall 22 days earlier than in the first year. The epact of the third year is 3, because if 11 days are again added to 22 the number 33 results, and if 30 days — which constitute one embolismic lunation — are cast out of it, 3 remain; and so on in succession. For all the epacts advance by a continual increase of 11 days, 30 being discarded whenever it can be discarded. Only when one reaches the last epact, the one corresponding to golden number 19, which is 29, are 12 added, so that when 30 is thrown out of the resulting 41 one has the epact 11 again, as at the beginning. The reason for this is that the last embolismic lunation, while golden number 19 is running, should be only 29 days. For if it contained 30 days, like the other six embolismic lunations, the new moons would not return after 19 solar years to the same days, but would slip toward the end of the months and would fall one day later than 19 years before. On this you will find more in the book on the new method of restoring the Roman calendar. There are, then, nineteen epacts, as many as there are golden numbers, and before the correction of the calendar they were matched with the golden numbers themselves in the arrangement set out in this table.

Tabella Epactarum respondentium Aureis numeris ante Calendarij correctionem. [*Table of the epacts corresponding to the golden numbers before the correction of the calendar.*]

Aur.									1	1	1				1				1			
num.	1	2	3	4	5	6	7	8	9	0	1	2	13	14	5	16	7	18	19			
Epactæ	x	xx	ii	x	x	v	xxv	xxvi	i	x	i	x	xxi	iii	x	xx	v	xvi	xx			
	i	ii	i	i	x	i	ii	ii	x	x	ii	ii	i	i	v	vi	ii	ii	ix			
					v	v																

Now since the nineteen-year cycle of the golden number is imperfect — the new moons not returning after 19 solar years exactly to the same places, as has been said — this cycle of 19 epacts will be imperfect as well. We have therefore corrected it in such a way that in future, in place of the golden number and of the said 19 epacts, we use 30 epactal numbers running in order from 1 to 30, although the last epact — the one that stands thirtieth in order — is not marked with a numeral but with this sign *, for the reason that no epact can be 30.

At various periods, however, various sets of nineteen out of these 30 epacts correspond to the nineteen golden numbers, according as the equation of the solar and lunar year requires. These nineteen epacts advance, as they formerly did, by the same number 11, and 12 are always added to the epact that corresponds to golden number 19, so as to obtain the next epact, corresponding to

golden number 1, for the reason just given. The three following tables make this plain. The first of them contains the golden numbers and their corresponding epacts from the year of the correction, 1582, after the removal of the ten days, up to the year 1700 exclusive; in that year the second table is to be taken up, and the third in the year 1900, and so on, one after another, as we shall explain below. All this is set out more fully in the book on the new method of restoring the Roman calendar. And although the common epacts are changed in March, in strict fact they should be changed at the beginning of the year, together with the golden number, in whose place these epacts of ours step in.

Tabella Epactarum respondentium Aureis numeris ab Idibus Octobris anni correctionis 1582. detractis prius X. diebus, vsque ad annum 1700. exclusiue.

[Table of the epacts corresponding to the golden numbers from the Ides of October of the year of the correction, 1582, the ten days having first been removed, up to the year 1700 exclusive.]

Aur.num					1	1	1			1	1			1	
.	6	7	8	9	0	1	2	13	14	5	6	17	18	9	1
Epactæ	xx	vi	xviii	xxi	x	x	i	xiii	xxiiii	v	x	xxvi	viii	xi	i
	vi	i		x		xi	i				vi	i		x	

Aur.num.				2			3				4			5
Epactæ				xii			xxiii				iiii			xv

Tabella Epactarum respondentium Aureis numeris ab anno 1700. inclusiue vsque ad annum 1900. exclusiue. *[Table of the epacts corresponding to the golden numbers from the year 1700 inclusive up to the year 1900 exclusive.]*

	1	1	1	1			1		1								
Aur. nu.	0	1	2	3	14	15	6	17	8	19	1	2	3	4	5	6	7
Epactæ	i	x	i	xi	xxiii	iiii	x	xx	vi	xviii	*	x	xxi	iii	xiiii	x	v
	x	x		i			v	vi	i			i	i			x	i
																	v

Aur. nu.							8				9						
Epactæ							xvii				xxviii						

Tabella Epactarum respondentium Aureis numeris ab anno 1900. inclusiue vsque ad annum 2200. exclusiue. [*Table of the epacts corresponding to the golden numbers from the year 1900 inclusive up to the year 2200 exclusive.*]

Aur.											1	1	1		1		1
num.	1	2	3	4	5	6	7	8	9	10	1	2	3	14	5	16	7
Epactæ	xxi	x	x	i	xii	xxiii	v	x	xxvi	vii	xi	*	x	xxi	ii	xiii	2
	x		xi	i	i			vi	i	i	x		i	i	i		5

Aur. num.		18	19
Epactæ		vi	xvii

Each table takes its beginning from the golden number that is current in the year in which the use of the table begins. And although in these tables different epacts always correspond to the golden numbers, it will nevertheless sometimes happen that the same epacts correspond to the same golden numbers as did formerly, before the correction of the calendar.

So, if the epact is to be found for any proposed year, look for the golden number of that year in the upper row of the table appropriate to the period in which the proposed year falls. Directly beneath the golden number, in the lower row of the table, you will find the epact of the proposed year, or else this sign *. Wherever that epact, or the sign *, is found in the calendar, on that day the new moon will occur. The golden number itself is found either by the preceding canon or from the epact table appropriate to the period in question, by assigning the first golden number of that table to the year in which the use of the table begins, the second golden number to the following year, and so on. In the same way the epact can be found without the golden number, if the first epact of the table is assigned to the year in which its use begins, the second epact to the following year, and so on.

An example. In the year of the correction, 1582, the golden number is 6 — the first of the first table, whose use begins from the Ides of October of the year of the correction, 1582, the ten days having first been removed. The epact will therefore be xxvi, which is placed under golden number 6; and the new moon will fall on 27 October, on 26 November, and on 25 December. Again, in the year 1583, now corrected, the golden number is 7, under which in the same table stands the epact vii; and that epact will indicate the new moons in the calendar throughout that year — thus in January on the 24th, in February on the 22nd, in March on the 24th, and so on. Again, in the year 1710 the golden number is 1, and beneath it, in

the epact row of the second table (which is the one that suits the proposed year), stands this sign *; that sign will show the new moons in the calendar throughout that year — namely in January on the 1st and the 31st; in March (for in February there will then be no new moon, since the sign * is not found in it) on the 1st and the 31st; in April on the 29th, and so on. Lastly, in the year 1916 the golden number is 17, under which, in the epact row of the third table — the one that suits the proposed year — the epact 25 is found, written not in the old numeral, as the other epacts are, but in the common numeral. Wherever, then, in the year 1916 the epact 25 written in the common numeral is found in the calendar, there the new moon falls: as in January on the 6th, in February on the 4th,

in March on the 6th, in April on the 4th, and so on. For whenever the epact 25 corresponds to golden numbers greater than 11 — that is, the last eight, from 12 up to 19 — the epact 25 written in the common numeral is to be taken in the calendar; but when the same epact 25 corresponds to golden numbers smaller than 12 — that is, the first eleven, from 1 up to 11 inclusive — then the epact xxv written in the old numeral is to be taken in the calendar. This happens with the epact 25 alone, and never with any of the others. The purpose of the arrangement is that the lunar years should correspond more exactly to the solar years. For the same reason, in six places of the calendar two epacts, namely xxv and xxiiii, are entered against the same day, so that the lunations may follow one another in such a way that alternately six of them contain 30 days and six others only 29. All of this is explained at length in the book on the new method of restoring the Roman calendar.

If the epacts distributed through the days of the calendar should sometimes indicate the new moons a little later than the facts require, that is no cause for surprise, since they have been arranged so by deliberate design. For since no lunar cycle can answer exactly to astronomical calculation, but indicates the new moons now earlier, now later, careful pains were taken in distributing this cycle of 30 epacts through the calendar so that the epacts should rather show the new moons somewhat late than ever anticipate their proper places — this so that the most holy Easter should not be celebrated, as by the Quartodeciman heretics, either on the fourteenth day of the moon or before it. Indeed, in the matter of celebrating Easter more regard was had to the fourteenth day of the moon, that is, to the full moon, than to the new moon; and it is of no great consequence if occasionally — though this rarely happens — this postponement of the new moon results in Easter being celebrated after the twenty-first day of the moon. That fault is smaller than if it were celebrated before the fourteenth day of the moon, or in the last month, which would be utterly absurd. But there is more on these

matters in the book on the new method of restoring the Roman calendar, where all of this is explained most fully.

But so that you may see where the three preceding tables were drawn from, and by what art others may be constructed, there has been added the following perpetual table of the cycle of the epacts, together with the table of the equation of the cycle of the epacts, from which the epact of any year whatever may be found in perpetuity. As for the rationale of the construction both of the perpetual table of the cycle of the epacts and of the table of the equation of the cycle of the epacts — since it cannot be explained in a few words, and since the letters of the alphabet are drawn from the expanded table of the cycle of the epacts — we refer the reader to the book on the new method of restoring the Roman calendar, where that expanded table is contained.

Tabella Cycli Epactarum perpetua. [*Perpetual table of the cycle of the epacts.*]

P	l	C	c	P	F	f	s	M	i	A
*	xi	xxii	iii	xiii	xxv 25	vi	xvii	xxviii	ix	x x
a	m	D	d	q	G	g	t	N	k	B
i	xii	xxiii	iiii	xv	xxvi	vii	xviii	xxix	x	xxi
b	n	E	e	r	H	h	u			
ii	xiii	xxiiii	v	xvi	xxvii	viii	xix			

Tabula æquationis Cycli Epactarum perpetui. [*Table of the equation of the perpetual cycle of the epacts.*]

Anni Domini		Anni Domini		Anni Domini	
N	1	A	2200	q	3600 Biss.
P	320 Biss.	u	2300	p	3700
P	500 Biss.	A	2400 Biss.	n	3800
a	800 Biss.	u	2500	n	3900
b	1100 Biss.	t	2600	n	4000 Biss.
c	1400 Biss.	t	2700	m	4100
	Detractis x. diebus.	t	2800 Biss.	l	4200

Anni Domini		Anni Domini		Anni Domini
D 1582		s 2900		l 4300
D 1600 Biss.		s 3000		l 4400 Biss.
C 1700		r 3100		k 4500
C 1800		r 3200 Biss.		k 4600
B 1900		r 3300		i 4700
B 2000 Biss.		q 3400		i 4800 Biss.
B 2100		p 3500		i 4900

Both tables are used as follows. Look for the proposed year in the table of the equation, or, if it is not found there, the next lower year; note the letter of the alphabet, capital or small, placed to its left; and work out the golden number belonging to the proposed year. Then in the perpetual table of the cycle of the epacts note the corresponding letter, and assign the golden number *i* to the cell which, counting that letter inclusively, is the third toward the left; assign the next golden number, *ii*, to the following cell to the right; and so on in order, until you reach the golden number of the proposed year, returning to the beginning of the table if you run through the whole of it, and counting also the capital letter **F**, under which the epacts *xxv* and 25 are placed written in different numerals, as a single cell. When this has been duly carried out,

you will at once find the epact of that year in the cell into which the golden number of the proposed year falls. One point, however, must be carefully observed. When the golden number of the proposed year is greater than 11 — as the last eight golden numbers, from 12 to 19, all are — and it falls into the cell of the letter **F**, where two epacts, *xxv* and 25, stand written in different numerals, take the epact 25. Take the other, *xxv*, if one of the first eleven golden numbers, from 1 to 11, all of which are less than 12, falls into that same cell.

Let us make this plain by examples. To the year 1582, after the correction, the capital letter **D** corresponds in the table of the equation, and the golden number is then 6. So if in the perpetual table of the cycle of the epacts you assign the golden number 1 to the cell of the small letter **a** — the third counting from the cell of the capital letter **D** — and the golden number 2 to the next cell to the right, and so on, the golden number 6 of the proposed year 1582 will fall into the cell of the epact *xxvi*, which will show the new moons in the calendar from the Ides of October of that year. Again, in the year 1583, now corrected, the golden number is 7, and the same capital letter **D** corresponds to it in the table of the equation; for since this year is not found in the table, the next lower one must be taken,

namely 1582, to which the capital **D** corresponds. So if in the table of the epacts you assign the golden number 1 to the cell of the small letter **a**, the third from the cell of the capital letter **D**, and the golden number 2 to the next cell to the right, and so on, the golden number 7 of the proposed year will fall into the cell of the epact vii, which will show the new moons in that year.

Likewise, for the year 4218 the letter **I** corresponds in the table of the equation, and the golden number is 1. So if in the table of the epacts you assign the golden number 1 of that year to the cell of the letter **u**, which is the third toward the left from the cell of the letter **I**, you will find the epact xix for that year. Moreover, for the year 1710 the capital letter **C** corresponds in the table of the equation, and again the golden number is 1. So if you assign the golden number 1 of that year to the first cell, that of the capital letter **P**, in the table of the epacts — the cell that is the third from the capital letter **C** — you will find * as the epact of that year. Again, for the year 1912 the capital letter **B** corresponds in the table of the equation, and the golden number is 13. Therefore, if in the perpetual table of the epacts the golden number 1 is assigned to the cell of the capital letter **N**, which is the third from the capital letter **B**, and the golden number 2 to the next cell to the right, and so on, returning to the beginning of the table, the golden number 13 of the proposed year will fall into the second cell. The epact will therefore be xi.

Further, for the year 1715 the capital letter **C** corresponds in the table of the equation, and the golden number is 6. So if you assign the golden number 1 to the cell of the capital letter **P** in the table of the epacts, the third from the cell of the capital letter **C**, and the golden number 2 to the next cell to the right, and so on, the golden number 6 of the proposed year will fall into the cell of the letter **F**, under which two epacts, xxv and 25, are set, expressed in different characters. But since the golden number 6 is less than 12, the former epact, xxv, is to be taken for the year 1715. Finally, for the year 1916 the capital letter **B** corresponds in the table of the equation, and the golden number is 17. For that reason, if in the table of the epacts the golden number 1 is given to the cell of the letter **N**, which is the third from the cell of the capital **B**, and the golden number 2 to the next cell to the right, and so on, returning to the beginning of the table, the golden number 17 of the proposed year will meet that same cell of the letter **F**, under which the two epacts xxv and 25 are set in different characters. And since the golden number 17 is greater than 11, the latter epact, 25, is to be taken for the year 1916. In this way you will find the epact of any year whatever, in perpetuity.

From all this anyone can easily construct, if he wishes, a short table like the three above, containing the epacts that serve certain determinate years. For instance:

For example. For the said year 2200 the capital letter **A** corresponds in the table of the equation, and the golden number is 16. So if we assign the golden number 1 to the cell of the capital letter **M** in the perpetual table of the epacts — the cell that is the third from the cell of the letter **A** — and the golden number 2 to the next cell to the right, and so on, the golden number 16 of the said year 2200 will fall into the cell of the small letter **n**, under which is found the epact *xiii* for that year. Accordingly, the short table of the epacts corresponding to the golden numbers, begun from the golden number 16 and the epact *xiii* of that year, will stand thus.

Aur.num. [golden number]	1 6	17	1 1 8 9	1 1	2 3 4 5	6	7	8 9	1 0	11	1 2
Epactæ [epacts]	xi ii	xxii ii	v x v	xxv iii i	i x i x x x	xxi ii	iii i	x x v x	v i	xvi ii	x xi x
13	14						15				
x	xxi						ii				

But these same epacts can be extracted more easily from the perpetual table of the cycle of the epacts. For the golden number 1 is assigned to the cell of the capital letter **M**; the golden number 2 to the next cell to the right, where the letter **i** stands; the golden number 3 to the next cell to the right, where the capital letter **A** stands; and the golden number 4 to the cell next after that to the right, in which the small letter **a** is written; and so on, as has been said. The epacts, then, are to be written under the golden numbers of this temporary table just as they correspond to the golden numbers in that perpetual table of the cycle of the epacts, as you see done in the example. From this it is easy to see how the three earlier temporary tables of the epacts were composed. Still other ways — and expeditious ones — of finding the epact of any year you will find in the book of the *Explicatio* of the restored Roman Calendar [*Explicatio Romani Calendarii*].

Canon 3.

ON THE SOLAR CYCLE, OR THE CYCLE OF THE DOMINICAL LETTERS, OF 28 YEARS.

The solar cycle, or cycle of the dominical letters, is a revolution of the number 28, from 1 up to 28; and once that revolution is complete it returns again to unity. Every year of this cycle takes its beginning from January, just as was said of the golden number in the nineteen-year cycle. This solar cycle of 28 years arises from the multiplication of 7 by 4: there are seven dominical letters for the seven days of the week, and every fourth year one day is intercalated, so that the order of those seven letters is then interrupted and two dominical letters are taken. By this cycle the dominical letter of any year whatever is found in perpetuity, as we shall teach at the end of the next canon.

So that the number of the solar cycle may be found for any proposed year, the following short table has been drawn up. Its use begins from the year of the correction 1582 and lasts in perpetuity. From it the number of the solar cycle for any current year after the year 1582 will be found in this way.

Short table of the solar cycle, taking its beginning from the year of the correction 1582. [*Tabella cycli Solaris initium sumens ab anno correctionis 1582.*]

2	2	2	2	2	2											1	1	1	1	1	1	1	1						
3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7							
18						19						20						21						22					

To the year 1582 assign the first number of the table, which is 23; to the following year 1583 the second, which is 24; and so on without end, until you reach the year whose solar-cycle number you are seeking, returning to the beginning of the table as often as you run through it. The cell into which the proposed year falls will indicate the number of the solar cycle sought.

But it is very laborious and tiresome to count out so many years in that table and to run through it so many times until one reaches the proposed year — especially if the proposed year lies far from 1582. We have therefore constructed this other table, from which the number of the solar cycle for any year, as far before the year 1582 as after it, will be found without great labour, in the following way.

Look for the proposed year in the table under the years of the Lord. If it is set down there, the number placed to its right — after 9 has first been added, as is directed at the head of the table, and 28 cast out after this addition, if it can be cast out — will be the number of the solar cycle sought. But if the proposed year is not contained in the table, take the next lower year that the table does contain, together with the number of the solar cycle corresponding to it. Then take, in the same table, the years that remain over, together with the number of the solar cycle corresponding to them; add that to the number of the solar cycle found before; cast out 28 from the composite number if it can be cast out; and finally add 9. For the composite number, with 28 first cast out if it can be cast out, will be the number of the solar cycle sought. If the years that remained over are likewise not found in the table, again take the next lower year together with its corresponding number of the solar cycle, add that to the number of the solar cycle found before, and cast out 28 from the composite number if it can be cast out. The same is to be done with the remaining years that are left over, until you have found them all in the table. Finally, to the last number of the solar cycle made up out of the solar-cycle numbers found in the table, 9 must be added, and 28 cast out from the sum that results, if it can be cast out. In this way the number of the solar cycle of the proposed year will be produced. And if after the addition of 9 the composite number turns out to be 28, so that after the subtraction of 28 nothing remains, the number of the solar cycle will be 28.

Table for finding the number of the solar cycle of any year. [*Tabula ad numerum cycli Solaris cuiuslibet anni inueniendum.*]

An. Domini [years of the Lord]	Cyclus Solaris. <i>Adde 9</i> [solar cycle; add 9]	Ann i Do min i	Cyclus Solaris. <i>Adde 9</i>	Ann i Do min i	Cyclus Solaris. <i>Adde 9</i>	Ann i Do min i	Cyclus Solaris. <i>Adde 9</i>
1	1	300	20	500 00	20	700 000 0	0
2	2	400	8	600 00	24	800 000 0	8
3	3	500	24	700 00	0	900 000 0	16
4	4	600	12	800 00	4	100 000 00	24
5	5	700	0	900 00	8	200 000 00	20
6	6	800	16	100 000	12	300 000 00	16
7	7	900	4	200 000	24	400 000 00	12
8	8	100 0	20	300 000	8	500 000 00	8
9	9	200 0	12	400 000	20	600 000 00	4
10	10	300 0	4	500 000	4	700 000 00	0
20	20	400	24	600	16	800	24

An. Domini [years of the Lord]	Cyclus Solaris. <i>Adde 9</i> [solar cycle; add 9]	Ann i Do min i	Cyclus Solaris. <i>Adde 9</i>	Ann i Do min i	Cyclus Solaris. <i>Adde 9</i>	Ann i Do min i	Cyclus Solaris. <i>Adde 9</i>
		0		000		000	
30	2	500 0	16	700 000	0	900 000 00	20
40	12	600 0	8	800 000	12	100 000 000	16
50	22	700 0	0	900 000	24	200 000 000	4
60	4	800 0	20	100 000 0	8	300 000 000	20
70	14	900 0	12	200 000 0	16	400 000 000	8
80	24	100 00	4	300 000 0	24	500 000 000	24
90	6	200 00	8	400 000 0	4	600 000 000	12
100	16	300 00	12	500 000 0	12	700 000 000	0
200	4	400 00	16	600 000 0	20	800 000 000	16

Let us illustrate the matter by examples. Suppose the number of the solar cycle for the year 1000 is to be found. Since this year is found in the table, and the number 20 corresponds to it, adding 9 gives the number 29; and casting out 28 from that leaves 1 as the number of the solar cycle for the year 1000. Next, suppose the number of the solar cycle for the year 1582 is proposed for investigation. Since this year is not found in the table, take the year 1000, the next lower in the table, and its solar-cycle number 20. Then the remaining 582 years are to be taken in the table; and since they are not contained in it, take again the year 500, the next lower in the table, and its solar-cycle number 24. Adding this to the solar-cycle number 20 found before produces the number 44; and subtracting 28 from that leaves 16. After this the 82 years that remain are to be taken in the table; but since they are not found there, take the year 80, the next lower in the table, and its solar-cycle number 24. Adding this to the solar-cycle number 16 composed before yields the number 40; and subtracting 28 from that leaves 12. Finally the remaining 2 years are to be taken in the table, with the solar-cycle number 2 corresponding to them; and adding this to the solar-cycle number 12 just left gives the number 14. If 9 is added to that at the last, as the head of the table directs, the result is the solar-cycle number 23 for the year 1582.

Lastly, suppose the number of the solar cycle for the year 7075 is to be investigated. I take first the solar-cycle number 0 opposite the year 7000, and add it to the solar-cycle number 14 found opposite the year 70, making the number 14. Then to this number 14 I join the solar-cycle number 5 corresponding to the year 5, producing the number 19. To this I finally add 9, and so produce the solar-cycle number 28 for the year 7075.

Nine is always added to the last number because Christ was born in the tenth year of this solar cycle: in the year of the Lord 1 the solar-cycle number was 10, in the second year 11, and so on.

The composition of this table, too, does not differ from the construction of the table for finding the golden number, except that here 28 is to be cast out and not 19, as there. You can therefore easily extend it to as many years as you wish.

Even without this table, however, the number of the solar cycle will be found for any proposed year quite easily, by the rules of arithmetic, in this way. To the proposed year of the Lord add 9, and divide the composite number by 28. The number left over from the division — no account being taken of the quotient, which indicates only how many revolutions of the solar cycle have been completed from Christ up to the proposed year — will be the number of the solar cycle of the proposed year. And if nothing remains from the division, the number

of the solar cycle will be 28. Suppose, for instance, that the number of the solar cycle for the year 1582 is sought. I add 9, divide the composite number 1591 by 28, and find that 23 is left over from the division. In the year 1582, therefore, the number of the solar cycle will be 23. Again, suppose the number of the solar cycle for the year 1587 is wanted. I add 9, making 1596, divide that number by 28, and find that nothing is left over. In the year 1587, therefore, the number of the solar cycle will be 28. And so for the rest.

Canon 4.

ON THE DOMINICAL LETTER.

The cycle of the dominical letters [cylcus literarum Dominicalium] returns upon itself every 28 years, and the Roman Church has used it down to the present day. That cycle must now necessarily be interrupted — both because of the ten days removed from the month of October in the year 1582, and because of the three bissextiles that are to be omitted in every four hundred years, as was laid down in the book on the new method of restoring the Roman calendar and in the bull of the correction issued by Gregory XIII, Supreme Pontiff. We therefore set out the following table of dominical letters. It will serve for all the years after the Ides of October of the year of the correction 1582 (the ten days having first been removed), down to the year 1700 exclusive.

Table of dominical letters from the Ides of October of the year of the correction 1582 (the ten days having first been removed) down to the year 1700 exclusive.

c	b	A	f	e	d	c	A	g	f	e	c	b	A	g
		g				b				d				f
e	d	c	b	g	f	e	d	b	A	g	f	d		
			A				c				e			

The use of this table is as follows. In the year of the correction 1582, after the Ides of October (the ten days having first been removed), assign the letter c of the first cell; to the following year 1583 the letter b of the second cell; to the year 1584 the letters A, g of the third cell; and so on for the remaining years in order, cell by cell, until you reach the year proposed — returning to the beginning of the table

as often as you have run through it. For the cell into which the proposed year falls, provided that year is earlier than 1700, will give the dominical letter of the proposed year. If a single letter turns up, the year will be a common one; if a double letter, a bissextile. In that case the upper letter will show the Sunday in the calendar from the beginning of the year to the feast of St Matthias the Apostle, and the lower letter from that feast to the end of the year.

For example: suppose the dominical letter for the year 1587 is to be found. Count from the year 1582, which you assign to the first letter c, down to the year 1587, giving one year to each cell (reckoning any pair of letters, upper and lower, as a single cell). The year 1587 will fall on the letter d, which occupies the sixth place in the table. Throughout that year, then, the dominical letter is d, and the year is a common one, since a single letter turns up.

Again, suppose the dominical letter for the year 1616 is to be investigated. Count from the year 1582, as has been said, down to the year 1616, returning to the beginning of the table after you have run through it; you will arrive at the two letters c, b, placed in the seventh position. That year is therefore a bissextile, since a double letter turns up. The upper letter c will indicate the Sunday from the beginning of that year to the feast of St Matthias, and the lower letter b through the remaining part of the year.

[Margin: *Years at which the table of dominical letters begins.* 1582 1610 1638 1666 1694]

But for years that are not far distant from 1700, the counting can be made easier — and you can be spared repeated returns to the beginning of the table — if a certain table of years is composed by this device. To the year 1582, at which the use of the table of dominical letters begins, add 28; then add 28 again to the sum, and so on, but only so far that the last year is less than 1700, to which the use of the table of dominical letters does not reach. Then, if the year whose dominical letter is sought is contained in this table of years, the first letter of the table of dominical letters will be the dominical letter for that year. If it is not contained there, take in the table of years the next lower year, and count from it in the table of dominical letters just described, beginning at the first cell, down to the year proposed. This counting will bring you to the dominical letter without your ever having to return to the beginning of the table.

Suppose, for instance, that the proposed year is 1638, which is found in this table: the dominical letter for that year will be c, which stands first in the table of dominical letters. But suppose the proposed year is 1647, which is not contained

in this table. Then you must count in the table of dominical letters from the next lower year 1638 down to the given year 1647 — assigning, that is, the year 1638 to the first cell, the following year 1639 to the second cell, and so on. In this way the proposed year 1647 will fall into the tenth cell, that of the letter f, which is the third after a bissextile; and f is the dominical letter for that year.

When the year 1699 has run out, at the end of which the use of the table above comes to an end, the following table of dominical letters is to be taken up. Its use begins with the year 1700, and it is perpetual, provided the adjoining table of equation is employed, in this way.

Table of dominical letters from the year 1700 inclusive, perpetual, provided that in every 400 years three bissextiles are omitted.

I				II				III											
d	b	A	g	f	d	c	b	A	f	e	d	c	A	g	f	e	c	b	
c				e				g				b				d			
A		g		e		d		c		b		g		f		e			
		f								A									

Table of equation for the aforesaid table of dominical letters, perpetual from the year 1700.

Years of the Lord		Years of the Lord		Years of the Lord		Years of the Lord	
I	1700	I	5700	I	9700	I	13700
I	1800	I	5800	I	9800	I	13800
I		I		I		I	
I	1900	I	5900	I	9900	I	13900
I		I		I		I	
I		I		I		I	
I	2100	I	6100	I	10100	I	14100
I	2200	I	6200	I	10200	I	14200
I		I		I		I	
I	2300	I	6300	I	10300	I	14300
I		I		I		I	

Years of the Lord	Years of the Lord	Years of the Lord	Years of the Lord
I	I	I	I
I 2500	I 6500	I 10500	I 14500
I 2600	I 6600	I 10600	I 14600
I	I	I	I
I 2700	I 6700	I 10700	I 14700
I	I	I	I
I	I	I	I
I 2900	I 6900	I 10900	I 14900
I 3000	I 7000	I 11000	I 15000
I	I	I	I
I 3100	I 7100	I 11100	I 15100
I	I	I	I
I	I	I	I
I 3300	I 7300	I 11300	I 15300
I 3400	I 7400	I 11400	I 15400
I	I	I	I
I 3500	I 7500	I 11500	I 15500
I	I	I	I
I	I	I	I
I 3700	I 7700	I 11700	I 15700
I 3800	I 7800	I 21800	I 15800
I	I	I	I
I 3900	I 7900	I 11900	I 15900
I	I	I	I
I	I	I	I
I 4100	I 8100	I 12100	I 16100
I 4200	I 8200	I 12200	I 16200
I	I	I	I
I 4300	I 8300	I 12300	I 16300
I	I	I	I
I	I	I	I
I 4500	I 8500	I 12500	I 16500
I 4600	I 8600	I 12600	I 16600

Years of the Lord	Years of the Lord	Years of the Lord	Years of the Lord
I	I	I	I
I 4700	I 8700	I 12700	I 16700
I	I	I	I
I	I	I	I
I 4900	I 8900	I 12900	I 16900
I 5000	I 9000	I 13000	I 17000
I	I	I	I
I 5100	I 9100	I 13100	I 17100
I	I	I	I
I	I	I	I
I 5300	I 9300	I 13300	I 17300
I 5400	I 9400	I 13400	I 17400
I	I	I	I
I 5500	I 9500	I 13500	I 17500
I	I	I	I
I	I	I	I

To find the dominical letter of any year not earlier than 1700: look in the table of equation and see which of the old Roman numerals stands to the left of the proposed year — or, if that year is not entered in the table, to the left of the next lower year — and mark that numeral in the perpetual table of dominical letters. For if you assign to the cell of this old Roman numeral the year taken from the table of equation, the next year to the next cell, and so on until you reach the proposed year (returning to the beginning of the table if need be), you will light upon the cell of the dominical letter you are looking for. If that letter is single, the proposed year will be common; if double, bissextile — with the exception of those centesimal years in which the intercalary day is omitted, which are all those, and only those, that are set out in the table of equation. Since these are common years, only the lower of the two letters found is to be taken, the upper being left aside, because the upper served in the preceding year. In the other, bissextile, centesimal years — that is, all those not entered in the table of equation — both letters found are to be taken, just as in other bissextile years.

Example. To the year 1710 there corresponds in the table of equation the old numeral I; for since that year is not contained in the table, the next lower year 1700 is to be taken, and to it the numeral I corresponds. If, then, starting from the

year 1700 found in the table, you count through the cells of the perpetual table of dominical letters as far as the proposed year 1710 — beginning at the first cell, which is precisely the one above which stands the same old numeral I that was found in the table of equation — you will find the dominical letter e, the second after a bissextile; and the year 1710 will be a common year, the second after a bissextile.

Again, to the year 1912 there corresponds in the table of equation the old numeral III. Counting therefore from the year 1900 found in the table, through the cells of the table of dominical letters, beginning at the ninth cell — the one above which the old numeral III is placed — as far as the year 1912, we shall find the two dominical letters g, f; and that year will be a bissextile.

Further, to the year 1800 there corresponds in the table of equation the old numeral II, to which in the table of dominical letters there correspond the two letters f, e. Of these the lower, e, will serve for that year alone, since the year is a common one, while the upper letter f was the dominical letter in the preceding year 1799.

Lastly, to the year 3600 there corresponds in the table of equation the old numeral III, next to the year 3500, the next lower one. If, then, the cells are counted from the year 3500 in the table of dominical letters, taking the start at the ninth cell of this numeral III, these two letters b, A will be found, and both are to be taken, because that centesimal year is a bissextile, since it is not contained in the table of equation.

[Margin: 3500 3528 3556 3584 3612 3640 3668 3696]

Here too the device described above should be used, to make the counting easier. A table of years is to be constructed, advancing by the continual addition of 28 to the year found in the table of equation. So, in the example just given, to the year 3500, then to the sum 3528, and so on — but only so far that the last sum is less than 3700. For in that year a different old numeral will have to be taken in the table of dominical letters, as is clear from the table of equation. Once this table of years has been composed, we shall know at once from what year the counting in the table of dominical letters is to begin.

On this principle — to stay with the same example — under the old numeral III we shall begin the counting from the year 3584, which in the table of years is the next lower than the proposed year 3600; and 3600 will fall into the cell of the two letters b, A, as before.

Indeed this same table can be adapted to any centesimal year of the table of equation, if in place of the centesimal 3500 any other centesimal is taken. At any centesimal that has the numeral I or II, the counting should begin at that centesimal itself, then at 28, 56, 84 after that centesimal. But at any centesimal that has the numeral III, it should begin at that centesimal itself, then at 28, 56, 84 after that centesimal, and at 12, 40, 68, 96 after the centesimal next following — just as in the table set out here the counting is to begin at the centesimal 3500 itself, which has the numeral III in the table of equation, then at 28, 56, 84 after 3500, and at 12, 40, 68, 96 after 3600, which is the centesimal next following 3500.

The construction of the table of equation, moreover, is perfectly straightforward. It runs through all the centesimal years that are not bissextile, the bissextile centesimals being omitted; for in the former the order of the dominical letters is interrupted, but in the latter it is not. And so after every three centesimals one centesimal year is left out of the table, since that one is a bissextile. Then, as you see, the old numerals I, II, III are repeated in order.

From all this it will not be difficult for anyone to extract from our perpetual table a particular table serving his own time. For if a table of the 28 dominical letters is composed, beginning at the cell of that old numeral which in the table of equation corresponds to any given centesimal year, the result will be a table serving from that centesimal year to the centesimal year which follows next in the table of equation, exclusive — with this proviso, that of the first two letters corresponding to the centesimal year at which the use of the table begins, the lower is to be taken and the upper left aside. By this method the following table has been constructed. Its use begins with the year 1800 and lasts to the end of the year 1899, on this rule: that in the year 1800 the dominical letter is e, the lower of the first two f, e; that in the next year, 1801, the dominical letter is d; and so on.

Table of dominical letters from the year 1800 to the year 1900 exclusive.

f	d	c	b	A	f	e	d	c	A	g	f	e	c	b	A	g	e	d
e				g				b				d				f		
c		b		g		f		e		d		b		A		g		
		A								c								

We shall also find the same dominical letter for any year, perpetually, and quite readily, both before and after the year of the correction, from the ancient solar cycle — that is, the cycle of the dominical letters of 28 years — which the Church has used down to this day. That cycle, together with the table of Equation (which advances through all the centesimal years in such a way that every fourth centesimal is a bissextile, at which point the same old numeral is repeated), stands as follows.

Cyclus Solaris, seu literarum Dominicalium antiquus 28. annorum perpetuus. — The ancient solar cycle, or perpetual cycle of the dominical letters, of 28 years.

First block (cells 1–19). The row *Old numeral* gives the old numeral printed over the bissextile cell; *Letter* gives the upper (or single) letter of each cell; *2nd letter* gives the lower letter, printed only in the bissextile cells.

										1	1	1	1	1	1	1	1	1	1
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
Old numeral	V				VII				I				I				V		
									I				V				I		
Letter	g	e	d	c	b	g	f	e	d	b	A	g	f	d	c	b	A	f	e
2nd letter	f				A				c				e				g		

Second block (cells 20–28).

				20	21	22	23	24	25		26	27	28
Old numeral					I				III				
Letter				d	c	A	g	f	e		c	b	A
2nd letter					b				d				

Tabula æquationis Cycli Solaris antiqui. — Table of equation of the ancient solar cycle.

	Anni	Old	Anni	Old	Anni	
Old numeral	Domini	numer	Domini	numer	Domini	
		al		al		
V	1	VI	3100	VI	5000	
V	1582	VI	3200	Bi	VII	5100
				ss.		
<i>Detractis x. diebus.</i>		VII	3300	VII	5200	Bi
[Ten days having						ss.

Old numeral	Anni Domini	Old numeral	Anni Domini	Old numeral	Anni Domini	
been removed.]						
I	1582	I	3400	I	5300	
I	1600	Bi II ss.	3500	II	5400	
II	1700	II	3600	Bi III ss.	5500	
III	1800	III	3700	III	5600	Bi ss.
IV	1900	IV	3800	IV	5700	
IV	2000	Bi V ss.	3900	V	5800	
V	2100	V	4000	Bi VI ss.	5900	
VI	2200	VI	4100	VI	6000	Bi ss.
VII	2300	VII	4200	VII	6100	
VII	2400	Bi I ss.	4300	I	6200	
I	2500	I	4400	Bi II ss.	6300	
II	2600	II	4500	II	6400	Bi ss.
III	2700	III	4600	III	6500	
III	2800	IV	4700	IV	6600	
IV	2900	IV	4800	Bi V ss.	6700	
V	3000	V	4900	V	6800	Bi ss.

To find the dominical letter for any given year, look in the table of equation for the old numeral standing to the left of the proposed year — or, if that year is not entered in the table, of the next lower year — and mark that numeral in the solar cycle. Beginning from it inclusive, count off toward the right (starting again from

the beginning of the cycle, if need be) as many cells of dominical letters as there are units in the current number of the solar cycle, which you will find from Canon 3; you will land on the cell of the dominical letter you are seeking. If that letter is single, the proposed year will be a common year; if double, a bissextile — except in those centesimal years in which the intercalary day is dropped, namely all those, and only those, to which the syllable [*Biss.*] is not attached in the table of equation. In these, since they are common years, the lower of the two letters found is to be taken and the upper left aside, because the upper was the dominical letter in the preceding year. In the other centesimal years, the bissextile ones — all those to which the syllable [*Biss.*] is attached — both letters are to be taken, just as in other bissextile years.

Example. The year 1699 corresponds in the table of equation to the old numeral I, next to the year 1600, the next lower year. Since the number of the solar cycle for 1699 is 28, 28 cells of dominical letters must be counted, starting from the cell above which this numeral I is placed, and running as far as d, which will be the dominical letter of that year, the third after the bissextile. Again, the year 1700 corresponds in the table of equation to the old numeral II, and the number of the solar cycle is 1. In the first cell of dominical letters under the old numeral II, therefore, of the two letters d and c the lower will be the dominical letter of that year, because it is a common year; and the upper letter d was dominical in the preceding year, 1699, as the previous example showed. Lastly, the year 2000 corresponds in the table of equation to the old numeral IV, and the number of the solar cycle is then 21. So if 21 cells of dominical letters are counted, starting from the cell of this old numeral IV, these two letters will be found: b [?], A — both of which will be dominical in that year, since it is bissextile. But the first method is the more convenient, since it does not require the solar cycle.

CANON V.

DE INDICTIONE.

The indiction is a revolution of 15 years, running from 1 to 15; and when that revolution is complete the count returns to unity again. In papal bulls every year of this cycle begins from January, just as we wrote of the nineteen-year cycle of the golden number. And since the indiction is in constant use in diplomas and public documents, we shall easily find the current year of the indiction for any proposed year from the following table. Its use is perpetual, but it takes its start from the year of the correction, 1582.

Tabella Indictionis ab anno correctionis 1582. — Table of the indiction from the year of the correction, 1582.

10	11	12	13	14	15	1	2	3	4	5	6	7	8	9

For if you assign to the year 1582 the first number, which is 10, and to the following year 1583 the second number, which is 11, and so on in order down to the proposed year, returning to the beginning of the table as often as you run through it, the proposed year will fall on the indiction you are looking for.

But since it is tedious and laborious to run through so many years in that table, returning again and again to its beginning until the indiction of the proposed year turns up — especially if the proposed year is far from 1582 — we have drawn up this other table, from which the indiction of any year whatever, whether before 1582 or after it, will be found without much labour, as follows.

Tabula ad Indictionem cuiuslibet anni inueniendam. — Table for finding the indiction of any year.

Anni Domi ni	Indictio. <i>Adde 3</i>	Anni Domi ni	Indictio. <i>Adde 3</i>	Anni Domi ni	Indictio. <i>Adde 3</i>	Anni Domi ni	Indictio. <i>Adde 3</i>
1	1	300	0	50000	5	70000 00	10
2	2	400	10	60000	0	80000 00	5
3	3	500	5	70000	10	90000 00	0
4	4	600	0	80000	5	10000 000	10
5	5	700	10	90000	0	20000 000	5
6	6	800	5	10000 0	10	30000 000	0
7	7	900	0	20000 0	5	40000 000	10
8	8	1000	10	30000 0	0	50000 000	5
9	9	2000	5	40000	10	60000	0

Anni Domi ni	Indictio. <i>Adde 3</i>	Anni Domi ni	Indictio. <i>Adde 3</i>	Anni Domi ni	Indictio. <i>Adde 3</i>	Anni Domi ni	Indictio. <i>Adde 3</i>
				0		000	
10	10	3000	0	50000	5	70000	10
				0		000	
20	5	4000	10	60000	0	80000	5
				0		000	
30	0	5000	5	70000	10	90000	0
				0		000	
40	10	6000	0	80000	5	10000	10
				0		0000	
50	5	7000	10	90000	0	20000	5
				0		0000	
60	0	8000	5	10000	10	30000	0
				00		0000	
70	10	9000	0	20000	5	40000	10
				00		0000	
80	5	10000	10	30000	0	50000	5
				00		0000	
90	0	20000	5	40000	10	60000	0
				00		0000	
100	10	30000	0	50000	5	70000	10
				00		0000	
200	5	40000	10	60000	0	80000	5
				00		0000	

Look up the proposed year in the table above, or the next lower year if it is not found there; then the years still left over, together with the indictions set to the right of the years. For if you gather all these indictions into a single sum, in the order we taught in the canon both of the golden number and of the solar cycle, and finally add 3 — always casting out 15 as often as 15 can be cast out — you will have the indiction of the proposed year. And if the final sum, after the addition of 3, comes to 15, so that nothing is left when 15 is cast out, the indiction will be 15. We shall make this clear by an example or two. The year 2000 corresponds in the table to indiction 5; add 3 to it, and there

will be indiction 8 for the year 2000. Again, to find the indiction of the year 1582: take the year 1000, the next lower, with its indiction 10; then, out of the remaining 582 years, the year 500, the next lower, with its indiction 5, which added to the previous 10 makes 15 — and if 15 be cast out of this, nothing is left. After this, out of the remaining 82 years, take from the table the year 80, the next lower, with its indiction 5, which added to the indiction 0 just left over gives the number 5; and if to this be joined indiction 2, answering to the remaining 2 years, the number 7 results. Add 3 to this at last, and indiction 10 is made up for the year 1582. Finally, the indiction of the year 3040 will be found as follows. Add indiction 0, answering to the year 3000, the next lower, to indiction 10, which answers to the remaining 40 years, and the number 10 will be had; add 3 to it, and indiction 13 results for the year 3040.

Three is always added to the last number because Christ was born in the fourth year of the cycle of indictions, so that in the first year of the Lord the indiction was 4, in the second year indiction 5, and so on.

The construction of this table, too, is the same as that of the table for finding the golden number and the number of the solar cycle, except that here 15 is always to be cast out where possible, not 19 or 28 as there.

Even without this table, however, the indiction of any year is very easily found by the rules of arithmetic, in this way. Add 3 to the proposed year of the Lord, and divide the resulting number by 15. The number left over from the division — no account being taken of the quotient, since that merely shows how many revolutions of the cycle of indictions have passed from Christ down to the given year — will be the indiction sought. Thus for the year 1582 I add 3, making 1585; I divide this by 15, and 10 remains from the division as the indiction of the year 1582. Again, for the year 1587 I add 3, and the number 1590 results; I divide it by 15, and nothing is left over. The indiction is therefore 15 in that case.

CANON VI.

DE FESTIS MOBILIBVS.

By decree of the sacred Council of Nicaea, Easter — on which the other movable feasts depend — must be celebrated on the Sunday next following the fourteenth day of the Moon of the first month. (Among the Hebrews that month is called the first month whose fourteenth Moon either falls on the day of the vernal equinox, which occurs on the twenty-first day of the month of March, or follows it more closely.) The consequence is this: find the epact of any given year from Canon 2,

and in the Calendar, from the epact marked between the eighth day of March inclusive and the fifth of April inclusive — for the fourteenth Moon of this epact either falls on the day of the vernal equinox, that is, on 21 March, or follows it more closely — count downward fourteen days inclusive; the next Sunday following that fourteenth day (so that we may not coincide with the Jews, should the fourteenth day of the Moon happen to fall on a Sunday) will be Easter Day.

Example. In the year 1583, now corrected, the epact is vii and the dominical letter b. I therefore look for this epact vii in the Calendar between the eighth day of March and the fifth of April inclusive, and I find it opposite 24 March. Counting downward inclusive from that day through fourteen days, I obtain the fourteenth Moon, which I see falls on 6 April; and after that day the first dominical letter b is found opposite 10 April of the same month. Easter in the year 1583, therefore, had to be celebrated on 10 April. Again, in the year 1585 the epact is xxix and the dominical letter f. Since I find epact xxix set between 8 March and 5 April inclusive, opposite 12 April [?] — and counting downward inclusive from it through 14 days I find the fourteenth Moon on 14 April, which is a Sunday, since the dominical letter f stands opposite it — Easter is not to be placed on that fourteenth day, lest we coincide with the Jews, who celebrate Easter on the fourteenth day; the dominical letter f which follows the fourteenth Moon is to be taken, namely the one that stands opposite 21 April, and so Easter is to be placed on 21 April. Accordingly Easter that year fell on 21 April. Again, in the year 1592 the epact is xvi, and the dominical letter is double, e and d, since that year is bissextile. If, then, from epact xvi, which stands opposite 15 March, and which is set between 8 March and 5 April inclusive, 14 days are counted inclusive, the fourteenth Moon will fall on 28 March. And because the later of the two dominical letters is then current, namely d, which stands after 28 March — that is, after the fourteenth Moon — Easter that year will be celebrated on 29 March.

Once Easter Day has been found, the other movable feasts are easily found. If six Sundays are counted back before Easter Day in the Calendar, the first Sunday of Lent will be had, and the Wednesday immediately preceding it will be the first day of Lent, that is, Ash Wednesday; Quinquagesima Sunday is the Sunday immediately before that, Sexagesima Sunday is celebrated before Quinquagesima, and Septuagesima Sunday precedes Sexagesima. If, on the other hand, five Sundays are counted forward from Easter Sunday in the Calendar, Rogation days follow that fifth Sunday, and the Thursday next after them will be the Ascension of the Lord. The seventh Sunday after Easter will be Pentecost, immediately followed by Trinity Sunday, and on the Thursday next after Trinity the feast of Corpus Christi will be celebrated. On this reckoning, since Easter in

the year 1592 was celebrated on 29 March, the first Sunday of Lent will be celebrated on 16 February, the dominical letter then current being e; Ash Wednesday will be 12 February, and Septuagesima Sunday will fall on 26 January. Rogations will be on 4 May, the Ascension of the Lord on 7 May, Pentecost on 17 May, the feast of Trinity on 24 May, and lastly the feast of Corpus Christi will be celebrated on 28 May. The number of Sundays between Pentecost and Advent is found on this reckoning: count four Sundays before Christmas, for the fourth Sunday before Christmas is the first Sunday of Advent. Therefore, if all the Sundays are counted from Pentecost up to the first Sunday of Advent exclusive, the number of Sundays between Pentecost and Advent will be had — though we shall show a shorter way of finding this number a little further on.

To make all the movable feasts easier to find, two Paschal tables have been drawn up, one of them the old table and the other the new. From the old table the movable feasts are found as follows. In the left-hand margin of the table take the current epact, and in the line of dominical letters take the current dominical letter — but *below* the current epact, so that if the current dominical letter is found on the same line as the current epact, the letter to be taken is the next occurrence of that same dominical letter lower down. For opposite this dominical letter all the movable feasts are set out. Take the same examples as before. In the year 1583 the epact is vij, and the dominical letter is b; the b that occurs in the first place below epact vij will be found opposite the following: Septuagesima Sunday on 6 February, Ash Wednesday on 23 February, Easter on 10 April; the Ascension of the Lord on 19 May; Pentecost on 29 May, and the feast of Corpus Christi on 9 June. The Sundays between Pentecost and Advent will then be 25, and Advent will be celebrated on 27 November — and so with the rest. Again, in the year 1585 the epact is xxix and the dominical letter is f, which in the table is found on the same line as epact xxix. Another f must therefore be taken, the one found next below the epact; opposite it you will find Septuagesima on 17 February, Ash Wednesday on 6 March, and Easter on 21 April, and so on.

Note, too, that just as in a common year, when the dominical letter falls on the same line as the epact in the old table, the next occurrence of that same letter below the epact is used, as we have said, so also in a bissextile year, if either of the two dominical letters then current is found on the same line as the epact, the next pair of like letters lower down must be taken in order to find the movable feasts.

From the new Paschal table the same movable feasts are found in this way. In the cell of the current dominical letter, look for the current epact; for all the movable

feasts will be found directly opposite it. Thus in the year 1585, in the cell of the letter f, then current, on the line of epact xxix, which runs in that same year, one has Septuagesima on 17 February, Ash Wednesday on 6 March, and Easter on 21 April.

But whether we use the old Paschal table or the new one, in bissextile years all the movable feasts must be found by the *later* dominical letter — the one, that is, which runs after the feast of St Matthias the Apostle — so that we may not be in doubt which of the two letters is to be taken for finding this or that feast; with the proviso, however, that when Septuagesima and Ash Wednesday are found to fall in January or February, one day is to be added. The reason is this: before St Matthias's day the earlier dominical letter runs, which in the Calendar always follows the later one; but after the feast of St Matthias in February, although the later letter runs, the intercalary day is then inserted, so that the 24th of February is called the 25th, the 25th is called the 26th, and so on. If, however, Ash Wednesday falls in March, nothing is to be added, since the later letter is then running and the days of the month answer to their proper numbers, the intercalary day having already been added to February. Indeed, unless the search were made by the later letter, Septuagesima would not be found correctly in a bissextile year when epact xxiiiij or xxv is running with dominical letters d, c — as will be clear from the second and third examples, for the years 4088 and 3784. For example: in the bissextile year 2096 the epact will be v and the dominical letters A, g. If, then, the movable feasts are investigated by the later letter, which is g, Septuagesima will be found on 11 February and Ash Wednesday on 28 February. But if one day is added, Septuagesima falls on 12 February, which is a Sunday, and Ash Wednesday on 29 February, which is a Wednesday. Easter and the remaining feasts will fall on the days set out in the table. Again, in the bissextile year 4088 the epact will be xxiiiij and the dominical letters d, c. If, then, the movable feasts are sought by the letter c, which is the later one, Septuagesima will be found on 21 February; and if one day is added, it falls on 22 February, which is a Sunday. Ash Wednesday, however, will fall on 10 March, so nothing is added there, and so on.

Again, in the bissextile year 3784 the epact will be xxv and the dominical letters d, c. So once more, by the later letter c, Septuagesima will be found on 21 February — that is, with 1 added, on the 22nd. If in either of these two years one were to proceed by the earlier letter d, nothing would be achieved, since below epacts xxiiiij and xxv the letter d indicates Septuagesima on 15 February. That would be false, because in that year the later letter c yields Easter on 25 April,

and consequently Septuagesima must be celebrated on 22 February — as is perfectly clear if one counts the Sundays back from Easter Day to Septuagesima.

The Advent of the Lord is always celebrated on the Sunday nearest to the feast of St Andrew the Apostle, that is, from 27 November to 3 December inclusive; so that the current dominical letter, wherever it is found in the Calendar from 27 November inclusive to 3 December inclusive, marks Advent Sunday. For example, if the dominical letter is g, Advent Sunday will fall on the second of December, because that is where the letter g stands in the Calendar, and so on.

The number of Sundays between Pentecost and the Advent of the Lord is found most briefly as follows. See how many Sundays there are after Easter up to and including the feast of St George, which falls on 23 April. That many Sundays are to be added to 24 to give the number of Sundays between Pentecost and the Advent of the Lord. Thus, since when Easter is celebrated on 26 March four Sundays follow up to and including the feast of St George — which in that case also falls on a Sunday — there will be 28 Sundays between Pentecost and the Advent of the Lord. Likewise, since when Easter falls on 3 April two Sundays follow up to and including the feast of St George, there will be 26 Sundays between Pentecost and the Advent of the Lord. If no Sunday follows Easter Day up to and including that feast, or if Easter Day itself falls on that feast, there will be 24 Sundays; and finally, if Easter is celebrated after that feast, there will be only 23 Sundays between Pentecost and the Advent of the Lord.

From all this it is easy to understand how each of the two Paschal tables is constructed.

Before each of the two general Paschal tables there is placed a temporary table covering many years, opposite which all the movable feasts are found more quickly than one can say. This table has been extracted from the Paschal tables, from which countless others can be drawn out for any years whatever.

Furthermore, in the first Paschal table — the old one reformed — we have set the golden numbers to the left of the epacts, in the same order in which they used to be placed before the corrected year, so that the movable feasts might be found by them. We have done this so that anyone may investigate Easter and the other movable feasts from the Council of Nicaea down to the year of the correction, 1582, whenever he pleases or circumstances require. The movable feasts are drawn from the golden numbers, arranged in this way, by exactly the same device as from the epacts. Suppose, for example, we want to find out when these feasts were celebrated in the year 1450. Since in that year the golden number was

7 and the dominical letter d, take the golden number 7 in the left-hand margin, and the first letter d occurring below it; opposite this letter d one finds Septuagesima on 1 February; Ash Wednesday on 18 February; Easter on 5 April; the Ascension of the Lord on 14 May; Pentecost on 24 May; Corpus Christi on 4 June; the Sundays after Pentecost 26; and finally the first Sunday of Advent on 26 November — and so with the rest.

TABELLA TEMPORARIA FESTORVM MOBILIVM

(Temporary Table of the Movable Feasts)

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a ct æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
158 2	c	6	x x vi							23	28 Nou.
158 3	b	7	vi i	6. Feb.	23 . Fe b.	10 . Ap r.	19 . M aij	29 Maij	9 Iunii	25	27 Nou.
158 4	A g	8	x vi ii	29. Ian.	15 . Fe b.	1. Ap r.	10 . M aij	20 Maij	31 Maii	27	2 Dec.
158 5	f	9	x xi x	17. Feb.	6. M ar.	21 . Ap r.	30 . M aij	9 Iuni j	20 Iunii	24	1 Dec.
158 6	e	1 0	x	2. Feb.	19 . Fe b.	6. Ap r.	15 . M aij	25 Maij	5 Iunii	26	30 Nou.
158 7	d	1 1	x xi	25. Ian.	11 . Fe b.	29 . M ar.	7. M aij	17 Maij	28 Maii	27	29 Nou.

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a ct æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
158 8	cb	1 2	ii	14. Feb.	2. M ar.	17 .	26 .	5 Iuni j	16 Iunii	24	27 Nou.
158 9	A	1 3	xi ii	29. Ian.	15 .	2. Ap r.	11 .	21 Maij	1 Iunii	27	3 Dec.
159 0	g	1 4	x xi iii	18. Feb.	7. M ar.	22 .	31 .	10 Iuni j	21 Iunii	24	2 Dec.
159 1	f	1 5	v	10. Feb.	27 .	14 .	23 .	2 Iuni j	13 Iunii	25	1 Dec.
159 2	ed	1 6	x vi	26. Ian.	12 .	29 .	7. M	17 Maij	28 Maii	27	29 Nou.
159 3	c	1 7	x x vi i	14. Feb.	3. M ar.	18 .	27 .	6 Iuni j	17 Iunii	24	28 Nou.
159 4	b	1 8	vi ii	6. Feb.	23 .	10 .	19 .	29 Maij	9 Iunii	25	27 Nou.
159 5	A	1 9	xi x	22. Ian.	8. Fe b.	26 .	4. M	14 Maij	25 Maii	28	3 Dec.

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a ct æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
159 6	gf	1	i	11. Feb.	28 . Fe b.	14 . Ap r.	23 . M ai,	2 Iuni j	13 Iunii	25	1 Dec.
159 7	e	2	xi i	2. Feb.	19 . Fe b.	6. Ap r.	15 . M aij	25 Iuni j	5 Iunii	26	30 Nou.
159 8	d	3	x xi ii	18. Ian.	4. Fe b.	22 . M ar.	30 Ap r.	10 Maij	21 Maii	28	29 Nou.
159 9	c	4	iii i	7. Feb.	24 . Fe b.	11 . Ap r.	20 M aij	30 Maij	10 Iunii	25	28 Nou.
160 0	bA	5	x v	30. Ian.	16 . Fe b.	2. Ap r.	11 M aij	21 Maij	1 Iunii	27	3 Dec.
160 1	g	6	x x vi	18. Feb.	7. M ar.	22 . Ap r.	31 M aij	10 Iuni j	21 Iunii	24	2 Dec.
160 2	f	7	vi i	3. Feb.	20 . Fe b.	7. Ap r.	16 M aij	26 Maij	6 Iunii	26	1 Dec.
160 3	e	8	x vi ii	26. Ian.	12 . Fe b.	30 . M ar.	8 M aij	18 Maij	29 Maii	27	30 Nou.

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a c t æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
160 4	dc	9	x xi x	15. Feb.	3. M ar.	18 . Ap r.	27 M aij	6 Iuni j	17 Iunii	24	28 Nou.
160 5	b	1 0	x	6. Feb.	23 . Fe b.	10 . Ap r.	19 M aij	29 Maij	9 Iunii	25	27 Nou.
160 6	A	1 1	x xi	22. Ian.	8. Fe b.	26 . M ar.	4 M aij	14 Maij	25 Maii	28	3 Dec.
160 7	g	1 2	ii	11. Feb.	28 . Fe b.	15 . Ap r.	24 M aij	3 Iuni j	14 Iunii	25	2 Dec.
160 8	fe	1 3	xi ii	3. Feb.	20 . Fe b.	6. Ap r.	15 M aij	25 Maij	5 Iunii	26	30 Nou.
160 9	d	1 4	x xi iii	15. Feb.	4. M ar.	19 . Ap r.	28 M aij	7 Iuni j	18 Iunii	24	29 Nou.
161 0	c	1 5	v	7. Feb.	24 . Fe b.	11 . Ap r.	20 M aij	30 Maij	10 Iunii	25	28 Nou.
161 1	b	1 6	x vi	30. Ian.	16 . Fe b.	3. Ap r.	12 M aij	22 Maij	2 Iunii	26	27 Nou.

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a c t æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
161 2	A g	1 7	x x vi i	19. Feb.	7. M ar.	22 .	31 M aij	10 Iuni j	21 Iunii	24	2 Dec.
161 3	f	1 8	vi ii	3. Feb.	20 . Fe b.	7. Ap r.	16 M aij	26 Maij	6 Iunii	26	1 Dec.
161 4	e	1 9	xi x	26. Ian.	12 . Fe b.	30 . M ar.	8 M aij	18 Maij	29 Maii	27	30 Nou.
161 5	d	1	i	15. Feb.	4. M ar.	19 . Ap r.	28 M aij	7 Iuni j	18 Iunii	24	29 Nou.
161 6	cb	2	xi i	31. Ian.	17 . Fe b.	3. Ap r.	12 M aij	22 Maij	2 Iunii	26	27 Nou.
161 7	A	3	x xi ii	22. Ian.	8. Fe b. ar.	26 . M ar.	4 M aij	14 Maij	25 Maii	28	3 Dec.
161 8	g	4	iii i	11. Feb.	28 . Fe b.	15 . Ap r.	24 M aij	3 Iuni j	14 Iunii	25	2 Dec.
161 9	f	5	x v	27. Ian.	13 . Fe b.	31 . M ar.	9 M aij	19 Maij	30 Maii	27	1 Dec.

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a c t æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
162 0	ed	6	x x vi	16. Feb.	4. M ar	19 . Ap r.	28 M aii	7 Iuni j	18 Iunii	24	29 Nou.
162 1	c	7	vi i	7. Feb.	24 . Fe b.	11 . Ap r.	20 M aij	30 Maij	10 Iunii	25	28 Nou.
162 2	b	8	x vi ii	23. Ian.	9. Fe b.	27 . M ar.	5 M aij	15 Maij	26 Maii	27	27 Nou.
162 3	A	9	x xi x	12. Feb.	1. M ar.	16 . Ap r.	25 M aij	4 Iuni j	15 Iunii	25	3 Dec.
162 4	gf	1 0	x	4. Feb.	21 . Fe b.	7. Ap r.	16 M aij	26 Maij	6 Iunii	26	1 Dec.
162 5	e	1 1	x xi	26. Ian.	12 . Fe b.	30 . M ar.	8 M aij	18 Maij	29 Maii	27	30 Nou.
162 6	d	1 2	ii	8 Feb.	25 . Fe b.	12 . Ap r.	21 M aij	31 Maij	11 Iunii	25	29 Nou.
162 7	c	1 3	xi ii	31. Ian.	17 . Fe b.	4. Ap r.	13 M aii	23 Maij	3 Iunii	26	28 Nou.

Ann i Do min i	Lit. Do mi.	A u. N u.	E p a c t æ	Sept uage sima	Ci ne re s	Pa sc ha	As ce ns io	Pent ecos tes	Corpu s Christ i	Dominicæ post Pentec.	Prima Dominica Aduent.
162 8	bA	1 4	x xi iii	20. Feb.	8. M ar.	23 . Ap r.	1 Iu nij	11 Iuni j	22 Iunii	24	3 Dec.
162 9	g	1 5	v	11. Feb.	28 . Fe b.	15 . Ap r.	24 M aij	3 Iuni j	14 Iunii	25	2 Dec.
163 0	f	1 6	x vi	27. Ian.	13 . Fe b.	31 . M ar.	9 M aij	19 Maij	30 Maii	27	1 Dec.
163 1	e	1 7	x vi i	16. Feb.	5. M ar.	20 . Ap r.	29 M aij	8 Iuni j	19 Iunii	24	30 Nou.

TABVLA PASCHALIS Antiqua Reformata.

(The Old Paschal Table, Reformed)

Column headings as printed, with their English sense:

- **Au. Num.** — golden number [aureus numerus]
- (a narrow unlabelled column, left blank throughout)
- **Cyclus Epactarum** — cycle of the epacts
- **Lit. Domin.** — dominical letter
- **Dominica Septuagesimæ** (sub-head *Ianuar.*) — Septuagesima Sunday, in January
- **Dies Cinerum** (sub-head *Februa.*) — Ash Wednesday, in February
- **Dies Paschæ** (sub-head *Martij.*) — Easter Day, in March
- **Dies Ascensionis** (sub-head *Aprilis.*) — Ascension Day, in April
- **Dies Pentecostes** (sub-head *Maij.*) — Pentecost, in May

- **Corpus Christi** (sub-head *Maij.*) — Corpus Christi, in May
- **Dominicæ post Pentecosten.** — Sundays after Pentecost
- **Prima Dominica Aduentus.** — the first Sunday of Advent

A u. N u m.	Cycl Epa cta- .rum	Li t. D om in i c a Septu agesi m ianua r.	Dies Ciner um Febru a.	Dies Pasch æ Martij .	Dies Ascen sionis Aprilis .	Dies Pentec ostes Maij. Maij.	Corpu s Christ i Maij. Maij.	Domin icæ post Pentec osten.	Prima Domin ica Aduen tus.	
16	xxiiij									
5	xxij	d	18	4	22	30	10	21	28	29. No.
	xxj	e	19	5	23	1.Maij.	11	22	28	30
13	xx	f	20	6	24	2	12	23	28	1. Dec.
2	xix	g	21	7	25	3	13	24	28	2
	xviii	A	22	8	26	4	14	25	28	3
10	xvij	b	23	9	27	5	15	26	27	27. No.
	xvj	c	24	10	28	6	16	27	27	28
18	xv	d	25	11	29	7	17	28	27	29
7	xiiii	e	26	12	30	8	18	29	27	30
	xiii	f	27	13	31	9	19	30	27	1. Dec.
15	xij	g	28	14	1. Apri.	10	20	31	27	2
4	xj	A	29	15	2	11	21	1.Juni j.	27	3
	x	b	30	16	3	12	22	2	26	27. No.
12	ix	c	31	17	4	13	23	3	26	28
1	viii	d	1.Febr	18	5	14	24	4	26	29
	vii	e	2	19	6	15	25	5	26	30

A u . N u m .	Cycl us Epa cta- rum	Li t. D o m i n i c a S e p t u a g e s i m i n i a n u a r.	Domin ica Septu agesi mæ · Ianua r.	Dies Ciner um · Febru a.	Dies Pasch æ · Martij .	Dies Ascen sionis · Aprilis .	Dies Pentec ostes · Maij. .	Corpu s Christ i · Maij. .	Domin icæ post Pentec osten.	Prima Domin ica Aduen tus.
9	vj	f	3	20	7	16	26	6	26	1. Dec.
	v	g	4	21	8	17	27	7	26	2
1	iiij	A	5	22	9	18	28	8	26	3
7										
6	ijj	b	6	23	10	19	29	9	25	27. No.
	ij	c	7	24	11	20	30	10	25	28
1	j	d	8	25	12	21	31	11	25	29
4										
3	*	e	9	26	13	22	1. Iunij	12	25	30
							.			
	xxix	f	10	27	14	23	2	13	25	1. Dec.
1	xxvi	g	11	28	15	24	3	14	25	2
1	ij									
	xxvi	A	12	1. Mar	16	25	4	15	25	3
	j			t.						
1	xxvj	b	13	2	17	26	5	16	24	27. No.
9										
8	xxiii	c	14	3	18	27	6	17	24	28
	j									
		d	15	4	19	28	7	18	24	29
		e	16	5	20	29	8	19	24	30
		f	17	6	21	30	9	20	24	1. Dec.
		g	18	6	22	31	10	21	24	2
		A	19	8	23	1. Iunij	11	22	24	3
		b	20	9	24	2	12	23	23	27. No.
		c	21	10	25	3	13	24	23	28

TABVLA PASCHALIS ‹NOVA REFORMATA.›

(The New Paschal Table, Reformed)

Left-hand half (printed p. 34)

Column headings as printed, with their English sense:

- **Literæ Dominicales.** — dominical letters
- **Cyclus Epactarum.** — cycle of the epacts (seven columns wide)
- **Dominicæ inter Epiphan. & Septua.** — Sundays between Epiphany and Septuagesima
- **Septuagesima.** — Septuagesima Sunday
- **Dies Cinerum.** — Ash Wednesday

Dominical letter D

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum							Septuag esima.	Dies Cinerum .
1	x							18. Ian.	4. Feb.
	xi								
	ij								
2	x	x	xx	xi	x	xvij	xvj	25. Ian.	11. Feb.
	xi	xj		x	vi				
	j.				ij				
3	x	xi	xij	xi	xj	x	ix	1. Feb.	18. Feb.
	v.	iiij		j					
4	vi	vi	vj	v	iii	iiij	ij	8. Feb.	25. Feb.
	ij	j			j				
5	j	x	xxviiij	x	x	25.	xx	15. Feb.	4. Mar.
	*	xi		x	x	xxv	iiij		
		x		vi	vj	.			
				j					

Dominical letter E

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum								Septuage sima.	Dies Cinerum .
1	x	x							19. Ian.	5. Feb.
	xi	x								
	ij	ij								
2	x	x	xix	x	x	xvj	xv		26. Ian.	12. Feb.
	xj	x		vi	v					
				ij	ij					
3	xi	x	xij	xj	x	ix	vii		2. Feb.	19. Feb.
	ijj	ii					j			
		j								
4	vi	v	v	iii	ii	ij	j		9. Feb.	26. Feb.
	j	j		j	j					
5	*	x	xxviiij	x	x	25.	xxi		16. Feb.	5. Mar.
		x		x	x	xxv	ijj			
		i		vi	v					
		x		j	j					

Dominical letter F

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum								Septuag esima.	Dies Cinerum .
1	x	xxi	xxj						20. Ian.	6. Feb.
	xi	j								
	ij									
2	x	xix	xviiij	x	xvj	x	xi		27. Ian.	13. Feb.
	x			v		v	ijj			
				ij						
3	xi	xij	xj	x	ix	vi	vi		3. Feb.	20. Feb.
	ij					ij	j			
4	vj	v	iiij	ii	ij	j	*		10. Feb.	27. Feb.
				j						
5	x	xx	xxvij	x	25.	x			17. Feb.	6. Mar.
	xi	vii		x	xxv	xi				

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum				Septuag esima.	Dies Cinerum .
	x	j		v j	ij	

Dominical letter G

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum				Septuage sima.	Dies Cinerum.
2	xxi ij	xx ij	xxj	x x	21. Ian.	7. Feb.
3	xix	xv iij	xvij	x x v v j	x xiii j ii	28. Ian. 14. Feb.
4	xij	xj	x	i v x ii j	vij v j	4. Feb. 21. Feb.
5	v	iii j	iij	i j j	* x x i x	11. Feb. 28. Feb.
6	xx viiij	xx vi j	xvj	2 x 5 x . v	xxi iij	18. Feb. 7. Mar.

Dominical letter A

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum				Septuage sima.	Dies Cinerum.
2	xx iij	x x ij	xxj	x xi x x	22. Ian.	8. Feb.
3	xv iij	x v ij	xvj	x xi v iij j	x xij ii	29. Ian. 15. Feb.
4	xj	x	ix	v vi ii j j	v v j	5. Feb. 22. Feb.

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum				Septuage sima.				Dies Cinerum.
5	iii j	ii j	ij	j	*	x x i x	xx viiij	12. Feb.	1. Mar.
6	xx vi j	x x v j	25.	x x v	xi iiij			19. Feb.	8. Mar.

Dominical letter B

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum				Septuage sima.				Dies Cinerum .
2	x xi ij	x x ij	xxi	xx	x i x	xvi ij		23. Ian.	9. Feb.
3	x vi j	x v j	xv	xii ij	x ii j	xij xj		30. Ian.	16. Feb.
4	x	i x	viiij	vj	v ij	v iii j		6. Feb.	23. Feb.
5	iiij	ij j	j	*	x j	xx viiij	x x vi j	13. Feb.	2. Mar.
6	x x vj	2 5	xxv	xxi iiij	x x i x			20. Feb.	9. Mar.

Dominical letter C

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum				Septuag esima.				Dies Cinerum .
2	x	xx	xxi	x	xi	x	xvij	24. Ian.	10. Feb.

Dominicæ inter Epiphan. & Septua.	Cyclus Epactarum						Septuag esima.	Dies Cinerum .
	xi	ii		x	x	vi		
	ii					ii		
3	x	xv	xiiii	x	xii	xi	x	31. Ian. 17. Feb.
	vi			ii				
				i				
4	ix	vii	vii	v	v	iii	iii	7. Feb. 24. Feb.
		i		i		i		
5	ii	i	*	x	xx	x	xxv	14. Feb. 3. Mar.
				x	vii	x	j 25	
				i	i	vi		
				x		i		
6	x	xx						21. Feb. 10. Mar.
	x	iiii						
	v							

Right-hand half (printed p. 35)

Column headings as printed, with their English sense:

- **Pascha.** — Easter
- **Rogationes.** — the Rogation days
- **Ascensio.** — Ascension
- **Pentecostes.** — Pentecost
- **Trinitas.** — Trinity Sunday
- **Corpus Christi.** — Corpus Christi
- **Dñice inter Pent. & 1. Dñicã Augu.** — [*Dominicæ inter Pentecosten et primam Dominicam Augusti*] Sundays between Pentecost and the first Sunday of August
- **Domin. inter Pête. & Aduentum.** — [*Dominicæ inter Pentecosten et Aduentum*] Sundays between Pentecost and Advent
- **Prima Dominica Aduentus.** — the first Sunday of Advent

Pa sc ha .	Rog atio nes.	Asc ens io.	Pent ecost es.	Tri nit as.	Corpus Christi .	Dñice inter Pent. &1.Dñicã Augu.	Domin. inter Pête.&Adu e. ntum.	Prima Dominica Aduentus.
22. M ar.	27. Apr.	30 Ap r.	10 Maij	17 Ma ij	21 Maij	11	28	29. No.
29. M ar.	4.M aij	7 Ma ij	17 Maij	24 Ma ij	28 Maij	10	27	29
5. Ap r.	11. Maij	14 Ma ij	24 Maij	31 Ma ij	4. Iunij	9	26	29
12. Ap r.	18 Maij	21 Ma ij	31 Maij	7 Iun ij	11 Iunij	8	25	29
19. Ap r.	25 Maij	28 Ma ij	7 Iunij	14 Iun ij	18 Iunij	7	24	29
23. M ar.	28 Apr.	1 Ma ij	11 Maij	18 Ma ii	22 Maii	11	28	30. No.
30. M ar.	5 Maij	8 Ma ij	18 Maij	25 Ma ii	29 Maij	10	27	30
6. Ap r.	12 Maij	15 Ma ij	25 Maij	1 Iun ij	5 Iunij	9	26	30
13. Ap r.	19 Maij	22 Ma ij	1 Iunij	8 Iun ij	12 Iunij	8	25	30
20. Ap r.	26 Maij	29 Ma ij	8 Iunij	15 Iun ij	19 Iunij	7	24	30

Pa sc ha .	Rog atio nes.	Asc ens io.	Pent ecost es.	Tri nit as.	Corpus Christi .	Dñice inter Pent. &1.Dñicã Augu.	Domin. inter Pête.&Adu e. ntum.	Prima Dominica Aduentus.
24. M ar.	29 Apr.	2 Ma ij	12 Maij	19 Ma ij	23 Maij	11	28	1. Dec.
31. M ar.	6 Maij	9 Ma ij	19 Maij	26 Ma ij	30 Maij	10	27	1
7. Ap r.	13 Maij	16 Ma ij	26 Maij	2 Iun ij	6 Iunij	9	26	1
14. Ap r.	20 Maij	23 Ma ij	2 Iunij	9 Iun ij	13 Iunij	8	25	1
21. Ap r.	27 Maij	30 Ma ij	9 Iunij	16 Iun ij	20 Iunij	7	24	1
25. M ar.	30 Apr.	3 Ma ij	15 Maij	20 Ma ij	24 Maij	10	28	2. Dec.
1. Ap r.	7 Maij	10 Ma ij	20 Maij	27 Ma ij	31 Maij	9	27	2
8. Ap r.	14 Maij	17 Ma ij	27 Maij	3 Iun ij	7 Iunij	8	26	2
15. Ap r.	21 Maij	24 Ma ij	3 Iunij	10 Iun ij	14 Iunij	7	25	2
22. Ap r.	28 Maij	31 Ma ij	10 Iunij	17 Iun ij	21 Iunij	6	24	2

Pa sc ha .	Rog atio nes.	Asc ens io.	Pent ecost es.	Tri nit as.	Corpus Christi .	Dñice inter Pent. &1.Dñicã Augu.	Domin. inter Pête.&Adu e. ntum.	Prima Dominica Aduentus.
26. M ar.	1 Maij	4 Ma ij	14 Maij	21 Ma ij	25 Maij	10	28	3. Dec.
2. Ap r.	8 Maij	11 Ma ij	21 Maij	28 Ma ij	1 Iunij	9	27	3
9. Ap r.	15 Maij	18 Ma ij	28 Maij	4 Iun ij	8 Iunij	8	26	3
16. Ap r.	22 Maij	25 Ma ij	4 Iunij	11 Iun ij	15 Iunij	7	25	3
23. Ap r.	29 Maij	1 Iun ij	11 Iunij	18 Iun ij	22 Iunij	6	24	3
27. M ar.	2 Maii ij	5 Ma ij	15 Maij	22 Ma ij	26 Maij	10	27	27. No.
3. Ap r.	9 Maii ij	12 Ma ij	22 Maij	29 Ma ij	2 Iunij	9	26	27
10. Ap r.	16 Maii ij	19 Ma ij	29 Maij	5 Iun ij	9 Iunij	8	25	27
17. Ap r.	23 Maii ij	26 Ma ij	5 Iunij	12 Iun ij	16 Iunij	7	24	27
24. Ap r.	30 Maii ij	2 Iun ij	12 Iunij	19 Iun ij	23 Iunij	6	23	27

Pa sc ha .	Rog atio nes.	Asc ens io.	Pent ecost es.	Tri nit as.	Corpus Christi .	Dñice inter Pent. &1.Dñicã Augu.	Domin. inter Pête.&Adu e. ntum.	Prima Dominica Aduentus.
28. M ar.	3 Maii	6 Ma ij	16 Maij	23 Ma ij	27 Maij	10	27	28. No.
4. Ap r.	10 Maii	13 Ma ij	23 Maij	30 Ma ij	3 Iunij	9	26	28
11. Ap r.	17 Maii	20 Ma ij	30 Maij	6 Iun ij	10 Iunij	8	25	28
18. Ap r.	24 Maii	27 Ma ij	6 Iunij	13 Iun ij	17 Iunij	7	24	28
25. Ap r.	31 Maii	3 Iun ij	13 Iunij	20 Iun ij	24 Iunij	6	23	28

IANVARIVS. [January]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
*	A	Kal.	1	<i>Circumcision of the Lord.</i> Double.
xxix	b	iiij	2	Octave of St Stephen. Double, with commemoratio n of the Octaves of St John and of the Holy Innocents.

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxviii	c	iii	3	Octave of St John. Double, with commemoratio n of the Octave of the Holy Innocents.
xxvi	d	Pr.No n.	4	Octave of the Holy Innocents. Double.
xxv	e	Non.	5	Vigil.
25 xxv	f	viii	6	<i>Epiphany of the Lord.</i> Double.
xxiiii	g	vii	7	Of the Octave of the Epiphany.
xxiii	A	vi	8	Of the Octave.
xxii	b	v	9	Of the Octave.
xxj	c	iiii	10	Of the Octave.
xx	d	iii	11	Of the Octave, with commemoratio n of St Hyginus, Pope and martyr.
xix	e	Prid. Idib.	12	Of the Octave.
xviii	f	Idib.	13	Octave of the Epiphany. Double.
xvii	g	xix	14	Hilary, Bishop and Confessor. Semidouble,

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				with commemoratio n of St Felix, Priest and martyr.
xvj	A	xviiij	15	Paul the First Hermit. Semidouble, with commemoratio n of St Maurus, Abbot.
xv	b	xviij	16	Marcellus, Pope and martyr. Semidouble.
xiiiij	c	xvj	17	<i>Antony, Abbot.</i> Double.
xiiij	d	xv	18	<i>Chair of St Peter at Rome.</i> Double, with commemoratio n of St Prisca, Virgin and martyr.
xij	e	xiiiij	19	Marius, Martha, Audifax and Abachum, martyrs.
xj	f	xiiij	20	<i>Fabian and Sebastian,</i> martyrs. Double.
x	g	xij	21	Agnes, Virgin

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				and martyr. Double.
ix	A	xj	22	Vincent and Anastasius, martyrs. Semidouble.
viiij	b	x	23	Emerentiana, Virgin and martyr.
vij	c	ix	24	Timothy, Bishop and martyr.
vj	d	viiij	25	<i>Conversion of St Paul the Apostle.</i> Double.
v	e	vij	26	Polycarp, Bishop and martyr.
iiij	f	vj	27	John Chrysostom, Bishop and Confessor. Double.
iiij	g	v	28	Agnes, for the second time.
ij	A	iiij	29	
j	b	iiij	30	
*	c	Prid.K al.	31	

FEBRVARIVS. [February]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxix	d	Kal.	1	Ignatius, Bishop and martyr. Semidouble.
xxviiij	e	iiij	2	<i>Purification of the Blessed Virgin Mary.</i> Double.
xxvij	f	iiij	3	Blaise, Bishop and martyr.
25.xxvj	g	Pr.No n.	4	
xxv xxiiij	A	Non.	5	Agatha, Virgin and martyr. Semidouble.
xxiiij	b	viiij	6	Dorothea, Virgin and martyr.
xxij	c	vij	7	Romuald, Abbot. Double.
xxj	d	vj	8	
xx	e	v	9	Apollonia, Virgin and martyr.
xix	f	iiij	10	
xviiij	g	iiij	11	
xvij	A	Prid. Id.	12	
xvj	b	Idib.	13	
xv	c	xvj	14	Valentine, Priest and martyr.

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xiiij	d	xv	15	Faustinus and Jovita, martyrs.
xiiij	e	xiiij	16	
xij	f	xiiij	17	
xj	g	xij	18	
x	A	xj	19	Symeon, Bishop and martyr.
ix	b	x	20	
viiij	c	ix	21	
vij	d	viiij	22	<i>Chair of St Peter at Antioch.</i> Double.
vj	e	vij	23	Vigil
v	f	vj	24	<i>Matthias the Apostle.</i> Double.
iiij	g	v	25	
iiij	A	iiij	26	
ij	b	iiij	27	
j	c	Prid.K al.	28	

In a bissextile year February has 29 days, and the feast of St Matthias is celebrated on 25 February; "the sixth before the Kalends" is said twice, that is, on the 24th and on the 25th. The dominical letter that was taken up in the month of January is changed to the letter before it: if in January the dominical letter was A, it is changed to the one before it, which is g, and so on.

MARTIVS. [March]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
*	d	Kal.	1	
xxix	e	vj	2	
xxviiij	f	v	3	
xxviij	g	iiij	4	
xxvj	A	iii	5	
25. xxv	b	Pr.No n.	6	
xxiiiij	c	Non.	7	<i>St Thomas Aquinas, Confessor. Double, with commemoratio n of the holy martyrs Perpetua and Felicity.</i>
xxiiij	d	viiij	8	
xxij	e	vij	9	<i>The Forty Martyrs. Semidouble.</i>
xxj	f	vj	10	
xx	g	v	11	
xix	A	iiij	12	<i>Gregory, Pope and Confessor, and Doctor of the Church. Double.</i>
xviiij	b	iiij	13	
xvij	c	Prid. Id.	14	

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xvj	d	Idib.	15	
xv	e	xvij	16	
xiiij	f	xvj	17	
xiiij	g	xv	18	
xij	A	xiiij	19	Joseph, Confessor. Double.
xj	b	xiiij	20	
x	c	xij	21	Benedict, Abbot. Double.
ix	d	xj	22	
viiij	e	x	23	
vij	f	ix	24	
vj	g	viiij	25	<i>Annunciation of the Blessed Virgin Mary.</i> Double.
v	A	vij	26	
iiij	b	vj	27	
iiij	c	v	28	
ij	d	iiij	29	
j	e	iiij	30	
*	f	Prid.K al.	31	

APRILIS. [April]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxix	g	Kal.	1	

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxviiij	A	iiij	2	Francis of Paola, Confessor. Double.
xxvij	b	iiij	3	
25. xxvj	c	Pr.No n.	4	
xxv xxiiiij	d	Non.	5	
xxiiij	e	viiij	6	
xxij	f	vij	7	
xxj	g	vj	8	
xx	A	v	9	
xix	b	iiij	10	Leo, Pope and Confessor. Double.
xviiij	c	iiij	11	
xvij	d	Prid. Id.	12	
xvj	e	Idib.	13	
xv	f	xviiij	14	Tiburtius, Valerian, and Maximus, martyrs.
xiiiij	g	xvij	15	
xiiij	A	xvj	16	
xij	b	xv	17	Anicetus, Pope and martyr.
xj	c	xiiiij	18	
x	d	xiiij	19	
ix	e	xij	20	
viiij	f	xj	21	

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
vij	g	x	22	Soter and Caius, Pontiffs and martyrs. Semidouble.
vj	A	ix	23	George, Martyr. Semidouble.
v	b	vijj	24	
iiij	c	vij	25	<i>Mark the Evangelist.</i> Double.
iiij	d	vj	26	Cletus and Marcellinus, Pontiffs and martyrs. Semidouble.
ij	e	v	27	
j	f	iiij	28	Vitalis, Martyr.
*	g	iiij	29	Peter, martyr. Double.
xxix	A	Prid.K al.	30	

MAIVS. [May]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxvijj	b	Kal.	1	<i>Philip and James, Apostles.</i> Double.
xxvij	c	vj	2	Athanasius, Bishop and

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Confessor. Double.
xxvj	d	v	3	<i>The Finding of the Holy Cross.</i> Double; with the commemoratio n of Saints Alexander, Eventius, and Theodulus [Theodulj], martyrs, and of Juvenal, Bishop and Confessor.
25. xxv	e	iiij	4	Monica, widow.
xxiiij	f	iiij	5	
xxiiij	g	Pr.No n.	6	<i>John before the Latin Gate.</i> Double.
xxij	A	Non.	7	Stanislaus, Bishop and martyr. Double.
xxj	b	viiij	8	The Apparition of Saint Michael. Double.
xx	c	vij	9	Saint Gregory the Theologian, Bishop and Confessor. Double.
xix	d	vj	10	Gordian and

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Epimachus, martyrs.
xviii	e	v	11	
xvii	f	iiii	12	Nereus, Achilleus, and Pancratius, martyrs.
xvi	g	iii	13	
xv	A	Prid. Id.	14	Boniface, martyr.
xiiii	b	Idib.	15	
xiii	c	xvi	16	
xii	d	xv	17	
xi	e	xv	18	
x	f	xiiii	19	Pudentiana, virgin.
ix	g	xiii	20	
viii	A	xii	21	
vii	b	xi	22	
vi	c	x	23	
v	d	ix	24	
iiii	e	viii	25	Urban, Pope and martyr.
iii	f	vii	26	Eleutherius, Pope and martyr.
ii	g	vi	27	John, Pope and martyr.
i	A	v	28	
*	b	iiii	29	

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxix	c	iiij	30	Felix, Pope and martyr.
xxviiij	d	Prid.K al.	31	Petronilla, virgin.

IVNIVS. [June]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxviij	e	Kal.	1	
25. xxvj	f	iiij	2	Marcellinus, Peter, and Erasmus, martyrs.
xxv xxiiij	g	iiij	3	
xxiiij	A	Pr.No n.	4	
xxij	b	Non.	5	
xxj	c	viiij	6	
xx	d	vij	7	
xix	e	vj	8	
xviiij	f	v	9	Primus and Felician, martyrs.
xviij	g	iiij	10	
xvj	A	iiij	11	<i>Barnabas the Apostle.</i> Double.
xv	b	Prid. Id.	12	Basilides, Cyrinus, Nabor, Nazarius,

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				martyrs.
xiiiij	c	Idib.	13	Anthony of Padua, Confessor. Double.
xiiij	d	xviiij	14	Basil, Bishop and Confessor. Double.
xij	e	xviij	15	Vitus, Modestus, and Crescentia, martyrs.
xj	f	xvj	16	
x	g	xv	17	
ix	A	xiiiij	18	Mark and Marcellinus, martyrs.
viiij	b	xiiij	19	Gervase and Protase, martyrs.
vij	c	xij	20	Silverius, Pope and martyr.
vj	d	xj	21	
v	e	x	22	Paulinus, Bishop and Confessor.
iiiij	f	ix	23	Vigil.
iiij	g	viiij	24	<i>The Nativity of Saint John the Baptist.</i> Double.
ij	A	vij	25	Of the Octave of the Nativity of St John the

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
j	b	vj	26	Baptist. John and Paul, martyrs. Semidouble; with the commemoratio n of the Octave of the Nativity of St John.
*	c	v	27	Of the Octave of the Nativity of St John.
xxix	d	iiij	28	Leo, Pope and Confessor. Semidouble; with the commemoratio n of the Octave and of the Vigil.
xxviiij	e	iiij	29	<i>Peter and Paul, Apostles.</i> Double.
xxviij	f	Prid.K al.	30	<i>The Commemoration of St Paul the Apostle.</i> Double; with the commemoratio n of the Octave of St John.

IVLIVS. [JULY]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxvj	g	Kal.	1	Octave of St John the Baptist. Double; with the commemoratio n of the Octave of the Apostles.
25. xxv	A	vj	2	<i>The Visitation of the Blessed Virgin Mary.</i> Double; with the commemoratio n of the Octave of the Apostles.
xxiiij	b	v	3	Of the Octave of the Apostles.
xxiiij	c	iiij	4	Of the Octave.
xxij	d	iiij	5	Of the Octave.
xxj	e	Pr. Non.	6	Octave of the Apostles Peter and Paul. Double.
xx	f	Non.	7	
xix	g	viiij	8	
xviiij	A	vij	9	
xvij	b	vj	10	The Seven Brothers, Martyrs, and Saints Rufina and Secunda,

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Martyrs. Semidouble.
xvj	c	v	11	Pius, Pope and Martyr.
xv	d	iiij	12	Nabor and Felix, Martyrs; with the commemoratio n of John Gualbert, Abbot.
xiiij	e	iiij	13	Anacletus, Pope and Martyr. Semidouble.
xiiij	f	Prid. Id.	14	Bonaventure, Bishop and Confessor and Doctor of the Church. Double.
xij	g	Idib.	15	
xj	A	xvij	16	
x	b	xvj	17	Alexius, Confessor.
ix	c	xv	18	Symphorosa with her seven sons, Martyrs.
viiij	d	xiiij	19	
vij	e	xiiij	20	Margaret, Virgin and Martyr.
vj	f	xij	21	Praxedes, Virgin.
v	g	xj	22	<i>Mary Magdalen.</i>

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Double.
iiij	A	x	23	Apollinaris, Bishop and Martyr. Semidouble.
iiij	b	ix	24	Vigil; with the commemoratio n of St Christina, Virgin and Martyr.
ij	c	viiij	25	<i>James the Apostle.</i> Double; with the commemoratio n of St Christopher, Martyr, at Lauds only.
j	d	vij	26	<i>Anne, mother of the Blessed Virgin Mary.</i> Double.
*	e	vj	27	Pantaleon, Martyr.
xxix	f	v	28	Nazarius, Celsus, and Victor, Pope and Martyr; and Innocent, Pope and Confessor. Semidouble.
xxviiij	g	iiij	29	Martha, Virgin. Semidouble;

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				with the commemoratio n of Saints Felix, Pope, Simplicius, Faustinus, and Beatrice, Martyrs.
xxvij	A	iiij	30	Abdon and Sennen, Martyrs.
25. xxvj	b	Prid. Kal.	31	

AVGVSTVS. [AUGUST]

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxv xxiiij	c	Kalen.	1	<i>St Peter's Chains.</i> Double; with the commemoratio n of the Holy Maccabee Martyrs.
xxiiij	d	iiii	2	Stephen, Pope and Martyr.
xxii	e	iii	3	The Finding of St Stephen the Protomartyr. Semidouble.
xxi	f	Pr.	4	<i>Dominic,</i>

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
		Non.		<i>Confessor.</i> Double.
xx	g	Non.	5	<i>The Dedication of St Mary of the Snows.</i> Double.
xix	A	viii	6	<i>The Transfiguration of the Lord.</i> Double; with the commemoratio n of Saints Sixtus, Pope, Felicissimus, and Agapitus, Martyrs.
xviii	b	vii	7	Donatus, Bishop and Martyr.
xvii	c	vi	8	Cyriacus, Largus, and Smaragdus, Martyrs. Semidouble.
xvi	d	v	9	Vigil; with the commemoratio n of St Romanus, Martyr.
xv	e	iiii	10	<i>Lawrence,</i> <i>Martyr.</i> Double.
xiiii	f	iii	11	Of the Octave of St Lawrence; with the

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				commemoratio n of Saints Tiburtius and Susanna, Martyrs.
xiii	g	Prid. Id.	12	Of the Octave; with the commemoratio n of St Clare, Virgin.
xii	A	Idib.	13	Of the Octave; with the commemoratio n of Saints Hippolytus and Cassian, Martyrs.
xi	b	xix	14	Of the Octave; with the commemoratio n of the Vigil and of St Eusebius, Confessor.
x	c	xviii	15	<i>The Assumption of the Blessed Virgin Mary.</i> Double.
ix	d	xvii	16	Of the Octave of the Assumption of the Blessed Virgin Mary; with the commemoratio

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				n of the Octave of St Lawrence.
viii	e	xvi	17	Octave of St Lawrence; with the commemoratio n of the Octave of the Assumption.
vii	f	xv	18	Of the Octave; with the commemoratio n of St Agapitus, Martyr.
vi	g	xiiii	19	Of the Octave.
v	A	xiii	20	Bernard, Abbot. Double; with the commemoratio n of the Octave of the Assumption.
iiii	b	xii	21	Of the Octave.
iii	c	xi	22	Octave of the Assumption of the Blessed Virgin Mary. Double; with the commemoratio n of Saints Timothy, Hippolytus, and

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Symphorian, Martyrs.
ii	d	x	23	Vigil.
j	e	ix	24	<i>Bartholomew the Apostle.</i> Double. <i>At Rome it is celebrated on the 25th.</i>
*	f	viii	25	Louis, King of France, Confessor,
xxix	g	vii	26	Zephyrinus, Pope and Martyr.
xxviii	A	vi	27	
xxvii	b	v	28	<i>Augustine, Bishop, Confessor and Doctor of the Church.</i> Double; with the commemoratio n of St Hermes, Martyr [printed <i>martyrum</i>].
xxvi	c	iiii	29	<i>The Beheading of St John the Baptist.</i> Double; with the commemoratio n of St Sabina, Martyr.

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
25 xxv	d	iii	30	Felix and Adauctus, Martyrs.
xxiii	e	Pr. Kal.	31	

SEPTEMBER.

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxiij	f	Kal.	1	Giles, Abbot; with the commemoratio n of the holy Twelve Brothers, Martyrs.
xxij	g	iiij	2	
xxj	A	iiij	3	
xx	b	Pr. Non.	4	
xix	c	Non.	5	<i>The Nativity of the Blessed Virgin Mary.</i> Double; with the commemoratio n of St Adrian,
xviiij	d	viiij	6	
xviij	e	vij	7	
xvj	f	vj	8	

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Martyr, <i>at Lauds only.</i>
xv	g	v	9	Of the Octave of St Mary; with the commemoratio n of St Gorgonius, Martyr.
xiiij	A	iiij	10	Of the Octave.
xiiij [?]	b	iiij	11	Of the Octave; with the commemoratio n of Saints Protus and Hyacinth, Martyrs.
xij [?]	c	Prid. Id.	12	Of the Octave.
xj	d	Idib.	13	Of the Octave.
x	e	xviiij	14	The Exaltation of the Holy Cross. Double; with the commemoratio n of the Octave of the Nativity of St Mary.
ix	f	xvij	15	Octave of the Nativity of the Blessed Virgin Mary. Double; with the

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				commemoratio n of St Nicomedes, Martyr.
viiij	g	xvj	16	Cornelius and Cyprian, Bishop and Martyr. Semidouble; with the commemoratio n of Saints Euphemia, Lucy, and Geminianus, Martyrs.
vij	A	xv	17	
vj	b	xiiiij	18	
v	c	xiiij	19	Januarius, Bishop, and his companions, Martyrs. Semidouble.
iiiij	d	xij	20	Vigil; with the commemoratio n of St Eustace and his companions, Martyrs.
iiij	e	xj	21	<i>Matthew the Apostle.</i> Double.
ij	f	x	22	Maurice and his companions, Martyrs.

Cyclus Epact. [Cycle of the epacts]	Lit. Dominicales. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
j	g	ix	23	Linus, Pope and Martyr. Semidouble; with the commemoratio n of St Thecla, Virgin and Martyr.
*	A	viiij	24	
xxix	b	vii	25	
xxviiij	c	vi	26	Cyprian and Justina, Martyrs.
xxvij	d	v	27	Cosmas and Damian, Martyrs. Semidouble.
25 xxvj	e	iiiij	28	
xxv xxiiiij	f	iiij	29	<i>The Dedication of St Michael the Archangel.</i> Double.
xxiiij	g	Pr. Kal.	30	<i>Jerome, Priest, Confessor and Doctor of the Church.</i> Double.

OCTOBER.

Cyclus Epact. [Cycle of the epacts]	Lit. Do. minic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxii	A	Kalen.	1	Remigius, Bishop and

Cyclus Epact. [Cycle of the epacts]	Lit. Do. minic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				Confessor.
xxi	b	vi	2	
xx	c	v	3	
xix	d	iiii	4	<i>Francis,</i> <i>Confessor.</i> Double.
xviii	e	iii	5	Placidus and his companions, martyrs.
xvii	f	Pr. Non.	6	
xvi	g	Non.	7	St Mark, Pope and Confessor, with a commemoratio n of SS. Sergius, Bacchus, and Apuleius, martyrs.
xv	A	viii	8	
xiiii	b	vii	9	Dionysius, Rusticus, and Eleutherius, martyrs. Semidouble.
xiii	c	vi	10	
xii	d	v	11	
xi	e	iiii	12	
x	f	iii	13	
ix	g	Prid. Id.	14	Calixtus, Pope, and martyr. Semidouble.
viii	A	Idib.	15	

Cyclus Epact. [Cycle of the epacts]	Lit. Do. minic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
vii	b	xvii	16	
vi	c	xvi	17	
v	d	xv	18	<i>Luke the Evangelist.</i> Double.
iiii	e	xiiii	19	
iii	f	xiii	20	
ii	g	xii	21	Hilarion, Abbot; and a commemoratio n of SS. Ursula and her companions, virgins and martyrs.
j	A	xi	22	
*	b	x	23	
xxix	c	ix	24	
xxviii	d	viii	25	Chrysanthus and Daria, martyrs.
xxvii	e	vii	26	Evaristus, Pope and martyr.
xxvi	f	vi	27	Vigil.
25 xxv	g	v	28	<i>Simon and Jude,</i> <i>Apostles.</i> Double.
xxiiii	A	iiii	29	
xxiiij	b	iii	30	
xxij	c	Pr. Kal.	31	Vigil.

NOVEMBER.

Cyclus Epact. [Cycle of the epacts]	Lit. Domi nic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxj	d	Kal.	1	<i>The Feast of All Saints.</i> Double.
xx	e	iiij	2	<i>The Commemoration of All the Faithful Departed.</i> Double; and of the Octave of All Saints.
xix	f	iii	3	Of the Octave.
xviiij	g	Pr. Non.	4	Of the Octave, with a commemoratio n of SS. Vitalis and Agricola, martyrs.
xvij	A	Non.	5	Of the Octave.
xvj	b	viiij	6	Of the Octave.
xv	c	vjj	7	Of the Octave.
xiiiij	d	vj	8	The Octave of All Saints. Double; and a commemoratio n of the SS. Four Crowned Martyrs.
xiiij	e	v	9	<i>The Dedication of the Basilica of the Saviour.</i> Double, with a commemoratio

Cyclus Epact. [Cycle of the epacts]	Lit. Domi nic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				n of St Theodore, martyr.
xij	f	iiij	10	Tryphon, Respicius, and Nympha, martyrs.
xj	g	iiij	11	<i>Martin, Bishop and Confessor.</i> Double; and a commemoratio n of St Mennas, martyr.
x	A	Prid. Id.	12	Martin, Pope, and martyr. Semidouble.
ix	b	Idib.	13	
viiij	c	xviiij	14	
vij	d	xvij	15	
vj	e	xvj	16	
v	f	xv	17	Gregory Thaumaturgus, Bishop and Confessor.
iiij	g	xiiij	18	<i>The Dedication of the Basilicas of Peter and Paul.</i> Double.
iiij	A	xiiij	19	Pontianus, Pope and Martyr.
ij	b	xij	20	
j	c	xj	21	The Presentation of

Cyclus Epact. [Cycle of the epacts]	Lit. Domi nic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				St Mary. Double.
*	d	x	22	Cecilia, Virgin and martyr. Semidouble.
xxix	e	ix	23	Clement, Pope and martyr. Semidouble, with a commemoratio n of St Felicitas, martyr.
xxviii	f	viii	24	Chrysogonus, martyr.
xxvii	g	vii	25	<i>Catherine, Virgin and martyr.</i> Double.
25 xxvj	A	vi	26	Peter of Alexandria, Bishop and martyr.
xxv xxiiii	b	v	27	
xxiii	c	iiii	28	
xxii	d	iii	29	Vigil, and a commemoratio n of St Saturninus, martyr.
xxj	e	Pr. Kal.	30	<i>Andrew the Apostle.</i> Double.

DECEMBER.

Cyclus Epact. [Cycle of the epacts]	Lit. Domi nic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xx	f	Kal.	1	
xix	g	iiij	2	Bibiana, Virgin and martyr. Commemoratio n.
xviiij	A	iii	3	
xvij	b	Pr. Non.	4	Barbara, Virgin and martyr. Commemoratio n.
xvj	c	Non.	5	Sabbas, Abbot. Commemoratio n.
xv	d	viiij	6	Nicholas, Bishop and Confessor. Semidouble.
xiiiij	e	vij	7	<i>Ambrose, Bishop and Confessor, and Doctor of the Church.</i> Double.
xiiij	f	vj	8	<i>The Conception of the Blessed Mary.</i> Double.
xij	g	v	9	
xj	A	iiij	10	Melchiades, Pope and martyr. Commemoratio n.
x	b	iiij	11	Damasus, Pope

Cyclus Epact. [Cycle of the epacts]	Lit. Domi nic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
				and Confessor. Semidouble.
ix	c	Prid. Id.	12	
viiij	d	Idib.	13	<i>Lucy, Virgin and martyr.</i> Double.
vij	e	xix	14	
vj	f	xviiij	15	
v	g	xvij	16	
iiij	A	xvj	17	
iiij	b	xv	18	
ij	c	xiiiij	19	
j	d	xiiij	20	Vigil.
*	e	xij	21	<i>Thomas the Apostle.</i> Double.
xxix	f	xj	22	
xxviiij	g	x	23	
xxvij	A	ix	24	Vigil.
xxvj	b	viiij	25	<i>The Nativity of Our Lord Jesus Christ.</i> Double.
25 xxv	c	vii	26	<i>Stephen the Protomartyr.</i> Double, with a commemoratio n of the Octave of the Nativity.
xxiiii	d	vi	27	<i>John, Apostle and Evangelist.</i> Double, with a commemoratio n of the Octave.

Cyclus Epact. [Cycle of the epacts]	Lit. Domi nic. [Dominical letters]	[Roma n day]	Dies Mensis. [Day of the month]	[Feast]
xxiij	e	v	28	<i>The Holy Innocents, martyrs.</i> Double, with a commemoratio n of the Octaves.
xxii	f	iiij	29	Thomas of Canterbury, Bishop and martyr. Semidouble, with a commemoratio n of the Octaves.
xxj	g	iiij	30	Of the Sunday within the Octave of the Nativity, or of the Octave, with a commemoratio n of the Octaves.
19 xx	A	Pr. Kal.	31	<i>Sylvester, Pope and Confessor.</i> Double, with a commemoratio n of the Octaves.

CANON FOR THE GREGORIAN CALENDAR OF THE YEAR OF THE CORRECTION, 1582

(CANON IN CALENDARIVM GREGORIANVM ANNI CORRECTIONIS MDLXXXII.)

In the year of the Lord 1582 the old calendar, which the Roman Church has used up to the present day, is to be kept as far as 4 Nones of October — that is, up to and including the feast of St Francis. From that point this fragment of the calendar is to be taken up, which contains the last three months. October in it is truncated as well, since it comprises only 21 days. For in order that the vernal equinox may be restored to 21 March, where the Fathers of the Council of Nicaea found it, and from which it has by now slipped some ten days toward the beginning of March, Gregory XIII, Supreme Pontiff, has decreed that ten days be omitted after 4 Nones of October. One must therefore skip at once from 4 Nones of October to the Ides of October, so that, once the festival of St Francis has been celebrated, the following day is called the Ides of October, or 15 October, and on it is celebrated the feast of SS. Dionysius, Rusticus and Eleutherius, martyrs, with a commemoration of St Mark, Pope and Confessor, and of SS. Sergius, Bacchus, Marcellus and Apuleius, martyrs. On the next day, which is 16 October and is called 17 Kalends of November, the feast of St Calixtus, Pope and Martyr, is to be kept. On the day after that, which is 17 October and is called 16 Kalends of November, the office and Mass of the eighteenth Sunday after Pentecost are to be said — that will be the third Sunday of October — the dominical letter being changed from G to C. On the eighteenth day of October, or 15 Kalends of November, the feast of St Luke the Evangelist is to be celebrated; and from that day on, inclusive, the remaining feast days are to be kept as they are set down in the calendar, up to the end of the year 1582. After that, this fragment of the calendar will have no further use; instead the Perpetual Calendar is to be adopted, in which all 12 months are set out complete. Understand the same of the other years in which this correction will be made.

Therefore, after the removal of 10 days from the month of October in the year 1582, the dominical letter will be C, the epact will be xxvi, and the Martyrology letter will be capital G, as is taught in the proper Canons of the Calendar and of the Martyrology. Accordingly, wherever the letter C is found in this fragment of the calendar, Sunday is to be celebrated there. And wherever the epact xxvi is placed, there the new moon, or Moon 1, occurs. Finally, wherever a capital G appears in the Martyrology, the age of the Moon is to be reckoned under it. But in the year 1583, now corrected, the Canons of the perpetual Gregorian Calendar are

to be used; for the dominical letter will then be b, the epact vii, and the Martyrology letter lowercase g.

What is to be done in more remote regions, where the correction cannot be made in the year 1582 but only in 1583, 1584 or 1585, will be stated after the end of this fragment of the calendar.

OCTOBER.

Which lacks ten days for the correction of the solar year. [Cui desunt decem dies pro correctione Anni Solaris.]

Cycle of the
Epacts of the
year of the
correction 1582

[<i>Cyclus Epact. Anni correction. MDLXXXII.</i>]	Dominical Letter [<i>Lit. Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies Mensis.</i>]	Feast
xxii	A	Kal.	1	Remigius, Bishop and Confessor.
xxi	b	vi	2	
xx	c	v	3	
xix	d	iiii. Non.	4	<i>Francis, Confessor. Double.</i>
viii	A	Idib.	15	Dionysius, Rusticus and Eleutherius, martyrs. Semidouble, with a commemoratio n of St Mark, Pope and Confessor, and of SS. Sergius, Bacchus and

Cycle of the Epacts of the year of the correction 1582 [<i>Cyclus Epact.</i> <i>Anni correction.</i> <i>MDLXXXII.</i>]	Dominical Letter [<i>Lit.</i> <i>Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies</i> <i>Mensis.</i>]	Feast
				Apuleius, martyrs.
vii	b	xvii	16	Calixtus, Pope and Martyr. Semidouble.
vi	c	xvi	17	
v	d	xv	18	<i>Luke the</i> <i>Evangelist.</i> Double.
iiii	e	xiiii	19	
iii	f	xiii	20	
ii	g	xii	21	Hilarion, Abbot; and a commemoratio n of SS. Ursula and her companions, virgins and martyrs.
i	A	xi	22	
*	b	x	23	
xxix	c	ix	24	
xxviii	d	viii	25	Chrysanthus and Daria, martyrs.
xxvii	e	vii	26	Evaristus, Pope and Martyr.
xxvi	f	vi	27	Vigil
25 xxv	g	v	28	<i>Simon and Jude,</i>

Cycle of the
Epacts of the
year of the
correction 1582

<i>[Cylus Epact. Anni correction. MDLXXXII.]</i>	Dominical Letter [<i>Lit. Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies Mensis.</i>]	Feast
				<i>Apostles. Double.</i>
xxiiii	A	iiii	29	
xxiii	b	iii	30	
xxii	c	Pr. Kal.	31	Vigil

NOVEMBER.

OF THE YEAR OF THE CORRECTION. [*ANNI CORRECTIONIS.*]

Cycle of the
Epacts of the
year of the
correction 1582

<i>[Cylus Epact. Anni correction. MDLXXXII.]</i>	Dominical Letter [<i>Lit. Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies Mensis.</i>]	Feast
xxi	d	Kal.	1	<i>The Feast of All Saints. Double.</i>
xx	e	iiii	2	<i>The Commemoration of all the faithful departed. Double, and of the Octave of All Saints.</i>
xix	f	iii	3	Of the Octave.
xviii	g	Prid.	4	Of the Octave; and a commemoratio

Cycle of the Epacts of the year of the correction 1582 [<i>Cyclus Epact.</i> <i>Anni correction.</i> <i>MDLXXXII.</i>]	Dominical Letter [<i>Lit.</i> <i>Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies</i> <i>Mensis.</i>]	Feast
				n of SS. Vitalis and Agricola, martyrs.
xvii	A	Non.	5	Of the Octave.
xvi	b	viii	6	Of the Octave.
xv	c	vii	7	Of the Octave.
xiiii	d	vi	8	The Octave of All Saints. Double; and a commemoratio n of the SS. Four Crowned Martyrs.
xiii	e	v	9	<i>The Dedication of the Basilica of the Saviour.</i> Double; and a commemoratio n of St Theodore, martyr.
xii	f	iiii	10	Tryphon, Respicius and Nympha, martyrs.
xi	g	iii	11	<i>Martin, Bishop and Confessor.</i> Double; and a commemoratio n of St Mennas,

Cycle of the Epacts of the year of the correction 1582 [<i>Cyclus Epact.</i> <i>Anni correction.</i> <i>MDLXXXII.</i>]	Dominical Letter [<i>Lit.</i> <i>Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies</i> <i>Mensis.</i>]	Feast
x	A	Prid.	12	martyr. Martin, Pope and Martyr. Semidouble.
ix	b	Idib.	13	
viii	c	xviii	14	
vii	d	xvii	15	
vi	e	xvi	16	
v	f	xv	17	Gregory Thaumaturgus, Bishop and Confessor.
iiii	g	xiiii	18	<i>The Dedication of the Basilicas of Peter and Paul.</i> Double.
iii	A	xiii	19	Pontianus, Pope and Martyr.
ii	b	xii	20	
i	c	xi	21	
*	d	x	22	Cecilia, virgin and martyr. Semidouble.
xxix	e	ix	23	Clement, Pope and Martyr. Semidouble; and a commemoratio n of St Felicitas,

Cycle of the Epacts of the year of the correction 1582 [<i>Cyclus Epact.</i> <i>Anni correction.</i> <i>MDLXXXII.</i>]	Dominical Letter [<i>Lit.</i> <i>Dominic.</i>]	(Roma n day)	Day of the Month [<i>Dies</i> <i>Mensis.</i>]	Feast
				martyr.
xxviii	f	viii	24	Chrysogonus, martyr.
xxvii	g	vii	25	<i>Catherine, virgin and martyr.</i> Double.
25 xxvi	A	vi	26	Peter of Alexandria, Bishop and Martyr.
xxv xxiiii	b	v	27	
xxiii	c	iiii	28	
xxii	d	iii	29	Vigil; and a commemoratio n of St Saturninus, martyr.
xxi	e	Prid.	30	<i>Andrew the Apostle.</i> Double.

DECEMBER.

OF THE YEAR OF THE CORRECTION.

Cycle of the
Epacts of the
Year of the
Correction 1582

[Cyclis Epact. Anni correction. MDLXXXII.]	Dominical Letters [Lit. Dominic.]	Day of the Month [Dies Mensis.]		
xx	f	K	1	
		al		
		.		
xix	g	iii	2	Bibiana, virgin and martyr. Commemoration.
		i		
xviii	A	iii	3	
xvii	b	P	4	Barbara, virgin and martyr. Commemoration.
		ri		
		d.		
xvi	c	N	5	Sabbas, Abbot. Commemoration.
		o		
		n.		
xv	d	vi	6	Nicholas, Bishop and Confessor. Semidouble.
		ii		
xiiii	e	vi	7	<i>Ambrose, Bishop,</i> <i>Confessor and</i> <i>Doctor of the</i> <i>Church.</i> Double.
		i		
xiii	f	vi	8	<i>The Conception of</i> <i>the Blessed Mary.</i> Double.
xii	g	v	9	
xi	A	iii	10	Melchiades, Pope and martyr.
		i		

Cycle of the Epacts of the Year of the Correction 1582 [Cyclus Epact. Anni correction. MDLXXXII.]	Dominical Letters [Lit. Dominic.]	Day of the Month [Dies Mensis.]		
x	b	iii	11	Commemoration. Damasus, Pope and Confessor. Semidouble.
ix	c	P ri d.	12	
viii	d	Id ib .	13	<i>Lucy, virgin and martyr.</i> Double.
vii	e	xi x	14	
vi	f	x vi ii	15	
v	g	x vi i	16	
iiii	A	x vi	17	
iii	b	x v	18	
ii	c	xi iii	19	
i	d	xi ii	20	Vigil
*	e	xi i	21	<i>Thomas the Apostle.</i> Double.
xxix	f	xi	22	

Cycle of the Epacts of the Year of the Correction 1582 [Cyclus Epact. Anni correction. MDLXXXII.]	Dominical Letters [Lit. Dominic.]	Day of the Month [Dies Mensis.]		
xxviii	g	x	23	
xxvii	A	ix	24	Vigil
xxvi	b	vi ii	25	<i>The Nativity of Our Lord Jesus Christ. Double.</i>
25 xxv	c	vi i	26	<i>Stephen the Protomartyr. Double, with commemoration of the Octave of the Nativity.</i>
xxiiii	d	vi	27	<i>John, Apostle and Evangelist. Double, with commemoration of the Octave.</i>
xxiii	e	v	28	<i>The Holy Innocents, martyrs. Double, with commemoration of the Octaves.</i>
xxii	f	iii i	29	<i>Thomas of Canterbury, Bishop and martyr. Semidouble, with commemoration of the Octave.</i>
xxi	g	iii	30	<i>Of the Sunday</i>

Cycle of the
Epacts of the
Year of the
Correction 1582

[Cyclus Epact.
Anni correction.
MDLXXXII.]

Dominical
Letters [Lit.
Dominic.]

Day of the Month
[Dies Mensis.]

19 xx

A

P 31
ri
d.

within the
Octave of the
Nativity, or of the
Octave, with
commemoration
of the other
Octaves.

*Sylvester, Pope
and Confessor.*
Double, with
commemoration
of the Octaves.

WHAT IS TO BE OBSERVED IF THE CORRECTION OF THE CALENDAR IS NOT MADE IN THE YEAR 1582.

Exactly the same fragment of the calendar for the year of the correction, 1582, is to be used whatever year the correction is made in, and one must pass straight from 4 Nones October to the Ides of October, as has been said. The feasts falling between St Francis's day and St Luke the Evangelist's day, however, are to be celebrated as follows.

Suppose the correction is set up in the year 1583. Then the day following the feast of St Francis is to be called the Ides of October, that is, 15 October, and on it the feast of SS. Dionysius, Rusticus and Eleutherius, martyrs, is to be celebrated, with a commemoration of St Marcus, Pope and Confessor, and of SS. Sergius, Bacchus, Marcellus and Apuleius, martyrs. On the next day, which is 16 October and is called 17 Kalends November, the office and Mass are to be those of the twentieth Sunday after Pentecost — which will be the third Sunday of October — the

dominical letter being changed from F to B. On the day after that, which is 17 October and is called 16 Kalends November, the feast kept is that of St Calixtus, Pope and martyr. On 18 October, that is 15 Kalends November, the feast of St Luke the Evangelist is to be celebrated; and from that day inclusive the remaining feast days are to be kept as they are set out in the calendar. And so in the year 1583, after the removal of the ten days from the month of October, the dominical letter will be b, the epact vii, and the letter of the Martyrology g, lower case.

Suppose instead that the correction is set up in the bissextile year 1584, in which the dominical letters are E and D. Then the first day after the feast of St Francis is to be called the Ides of October, that is 15 October, and on it the feast of St Marcus, Pope and Confessor, is to be celebrated, with a commemoration of SS. Sergius, Bacchus, Marcellus and Apuleius, martyrs. On the next day, which is 16 October and is called 17 Kalends November, the feast kept is that of SS. Dionysius, Rusticus and Eleutherius, martyrs. On the day following, which is 17 October and is called 16 Kalends November, the feast of St Calixtus, Pope and martyr, is to be celebrated. On 18 October, that is 15 Kalends November, the feast of St Luke the Evangelist is to be celebrated. On the next day, the 19th — that is, 14 Kalends November — the office and Mass are to be said of Friday of the seventeenth Sunday after Pentecost, which is the second Sunday of October. On the day after that, that is 13 Kalends November, the office and Mass of the Blessed Virgin are to be said, as is customary on a Saturday. On 21 October the office and Mass are to be said of the eighteenth Sunday after Pentecost, which will be the third Sunday of October, the dominical letter being changed from D to G, together with a commemoration of St Hilarion, Abbot, and of SS. Ursula and her companions, virgins and martyrs, and so on. And so in the year 1584, after the removal of the ten days from the month of October, the dominical letter will be G, the epact xviii, and the letter of the Martyrology t.

Now suppose the correction is set up in the year 1585. Then the first day after the feast of St Francis is to be called the Ides, or 15 October, and on it the feast of St Marcus, Pope and Confessor, is to be celebrated, with a commemoration of SS. Sergius, Bacchus, Marcellus and Apuleius, martyrs. On 16 October the feast kept is that of SS. Dionysius, Rusticus and Eleutherius, martyrs. On 17 October the feast of St Calixtus, Pope and martyr, is to be held. On the 18th the feast of St Luke the Evangelist is to be celebrated. On the 19th the office and Mass are to be said of the Blessed Virgin, since it is a Saturday. On the 20th the office and Mass are to be those of the nineteenth Sunday after Pentecost, which will be the third Sunday of October, the dominical letter being changed from C to F, and so on. And so in the year 1585, after the removal of the ten days from the month of October, the

dominical letter will be F, the epact xxix, and the letter of the Martyrology N, upper case.

From these cases it will be easy to understand what must be done in any other year in which the correction is made, provided one carefully observes the Sunday and the dominical letter that has to be adopted. In the year following the year of the correction, the *Calendarium Gregorianum Perpetuum* is to be used, together with the Canons belonging to that same calendar.

FINIS.

EXPOSITION OF THE ROMAN CALENDAR RESTORED BY GREGORY XIII, SUPREME PONTIFF, PUBLISHED BY ORDER OF CLEMENT VIII, SUPREME PONTIFF.

BY CHRISTOPH CLAVIUS OF BAMBERG, OF THE SOCIETY OF JESUS.

CHAPTER ONE.

What Holy Scripture lays down concerning the celebration of Easter, and what the Holy Fathers and the Councils have decreed about it.

Now that the *Compendium of the New Method of Restoring the Calendar* has been sent out to the Christian princes, together with the perpetual Gregorian calendar, let us come to the explanation of the reasons for the calendar itself as emended and corrected. First let us set out precisely what Holy Scripture prescribes about the celebration of Easter, and what the Holy Fathers and the Councils decreed about it. For a good many people, because they did not understand this matter well enough, have not shrunk from attacking the Gregorian correction without any cause at all.

[Margin: Scripture's precept concerning the celebration of Easter.]

The Phase, or Passover, is therefore prescribed to the Hebrews in Exodus chapter 12, in these words: *The Lord also said to Moses and Aaron in the land of Egypt: This month shall be to you the beginning of months; it shall be the first among the months of the year. Speak to the whole assembly of the children of Israel, and say to them: On the tenth day of this month let every man take a lamb by his families and houses. And a little further on: And you shall keep it until the fourteenth day of this*

month, and the whole multitude of the children of Israel shall sacrifice it in the evening. And a little after: For it is the Phase (that is, the Passing) of the Lord. And below: And you shall keep this day as a memorial, and you shall celebrate it as a feast to the Lord in your generations with an everlasting observance. And shortly after: In the first month, on the fourteenth day of the month in the evening, you shall eat unleavened bread until the twenty-first day of the same month in the evening.

Then Leviticus chapter 23: *These therefore are the holy feasts of the Lord, which you must celebrate in their seasons. In the first month, on the fourteenth day of the month in the evening, is the Phase of the Lord; and on the fifteenth day of this month is the solemnity of the unleavened bread of the Lord.*

Likewise Numbers chapter 9: *The Lord spoke to Moses in the desert of Sinai, in the second year after they had gone out of the land of Egypt, in the first month, saying: Let the children of Israel keep the Phase at its proper time, on the fourteenth day of this month in the evening, according to all its ceremonies and its ordinances. And somewhat later: And the Lord spoke to Moses, saying: Speak to the children of Israel. A man who is unclean by reason of a soul, or is on a journey far off among your people, let him keep the Phase to the Lord in the second month, on the fourteenth day of the month in the evening.* In Numbers chapter 28 as well these words are found: *But in the first month, on the fourteenth day of the month, shall be the Phase of the Lord, and on the fifteenth day the solemnity.*

[Margin: When the Jews used to celebrate the Passover by divine precept.]

From all these passages it is clear that God had commanded the Hebrews to celebrate the Phase, or Passover, on the fourteenth day of the first month, in the evening.

[Margin: Which is the first month of the Jews.]

2. Now this month is a lunar month — for the Hebrews used lunar months — and the first month is the one whose fourteenth day of the Moon (counting in the day of the new moon, or Neomenia, itself) falls either on the day of the spring equinox or after the equinox

— the equinox that first occurs. This can be gathered clearly enough from the older and more learned Hebrews, who consistently handed down that the Passover was to be celebrated, according to the lunar cycle, on the fourteenth day of the Moon falling on the equinox itself or on the one next following it. The

richest witness to this is Josephus the Jew, in Book 3 of the *Jewish Antiquities*, chapter 13, where he writes:

In the month of Xanthicus, which we call Nisan, and which is the beginning of the year, on the fourteenth day of the Moon, with the Sun opposite in Aries — the month in which we were freed from the servitude of the Egyptians — he commanded us to offer each year, and to celebrate, the sacrifice which our fathers offered when they went out of Egypt (the sacrifice called the Passover); and we do indeed celebrate it by our tribes, keeping back nothing of what has been offered until the next day.

By these words Josephus plainly teaches that the fourteenth day of the Moon of the first month, on which the Jews used to celebrate the Passover, is the one that either falls on the day of the equinox or next follows the equinox — that is, when the Sun is either at the beginning of Aries or in some degree of Aries.

Anatolius, bishop of Laodicea in Syria, who flourished around the year of the Lord 280, some 45 years before the Council of Nicaea, teaches in the clearest terms that Philo — the most learned of the Jews — and other older Jews held the same view. After showing (as Eusebius reports, *Ecclesiastical History* VII, chapter 29) that the year, so far as the celebration of the Passover is concerned, must begin from the spring equinox, he adds this:

And therefore we say that those go seriously wrong who think the Passover should be celebrated before the beginning of this new year (that is, before the spring equinox). Nor does this reckoning take its first beginning from us: it is shown to have been approved by the ancient Jews and observed before the coming of Christ, as Philo and Josephus clearly teach, and, older than these, Agathobulus and his pupil Aristobulus of Paneas, who was one of the seventy elders sent by the high priests to Ptolemy, king of Egypt, to translate the books of the Hebrews into Greek; and they answered many questions on the traditions of Moses when the king put them and inquired of them. When, then, they were expounding the questions of Exodus, they said that the Passover must not be sacrificed before the spring equinox had passed. Aristobulus added this further point as well: that on the day of the Passover one must see to it not only that the Sun has crossed the spring equinox, but the Moon also. For since there are two equinoxes, of spring and of autumn, separated by equal intervals, and since the festival is fixed for the fourteenth day of the first month after evening, when the

Moon is found standing opposite the Sun from the other quarter of the sky — as one may verify with one's own eyes — the Sun is in every case found occupying the region of the spring equinox, and the Moon, on the contrary, that of the autumn equinox. I have read in their books, and in many others, much set out with the strongest arguments on these matters, which show plainly that the solemnity of the Passover must in every way be celebrated after the equinox.

This is what Eusebius reports of Anatolius.

From all this it is clear that the most ancient and the more expert Hebrews took from the tradition of Moses that the fourteenth day of the Moon of the first month is the one that either falls on the equinox or next follows it — so that a fourteenth day of the Moon preceding the equinox was always rejected as useless, and as belonging rather to the last month of the year than to the first. So much, then, is laid down in sacred and divine Scripture and by the more learned Hebrews concerning the Mosaic Passover.

[Margin: Why the Church preferred Easter to be movable rather than fixed.]

3 Now in the age of grace, after the Mosaic Law, the Catholic Church was not bound by those ceremonial precepts, since everything belonging to the Law ceased and lost its force through the death and resurrection of Jesus Christ, as the holy Doctors agree. Even so, she willed that the Christian Easter — of which the Hebrew Passover was the figure and shadow — should likewise be variable and movable rather than fixed and stationary, and that in celebrating it the same things should be observed as the Hebrews observed: namely the spring equinox and the fourteenth day of the Moon of the first month. This was on account of the sacramental sense and the hidden mysteries contained in celebrating the Easter of the Lord's resurrection in this way, as St. Augustine sets out at length in Book 2 *On the Inquiries of Januarius*, chapters 1 and 2. Therefore we should not listen to those who think — and in our own day there have certainly been men of that mind — that the Church ought to keep the solemnity of Easter always on a fixed day, like the other festivals that are called fixed and immovable, with no account taken of the Moon of the first month; their chief argument being that the Church would thereby free and disentangle herself completely from the difficulties and controversies that regularly arise among writers over the Paschal new moons. We should not, I say, listen to those who hold this view — even though the Church could freely do it by her own right, and no one could fault her for it, since that precept about the Passover is ceremonial and has now ceased, as has been said — because the Catholic Church has never used that manner of celebrating

Easter. In celebrating it she has always observed the motion of the Moon and of the Sun; this was so decreed by the most ancient and most holy Roman Pontiffs, and was moreover confirmed by the Council of Nicaea and by a great many others, as I shall shortly say. For that reason a custom so venerable seems in no way to be broken without some grave cause.

[Margin: The Christian Easter is to be celebrated on the first Sunday after the fourteenth day of the Moon of the first month.]

4 In one respect, however, the Church departed from the Jewish practice: she ordered Easter to be celebrated not on the fourteenth day of the Moon of the first month itself, as the Hebrews did, but on the Sunday that next follows the fourteenth day of the Moon of the first month, because the Lord rose from the dead on the first Sunday after the Jewish Passover. And so, just as the Jews celebrated the Passover on the fourteenth day of the Moon because of the sacrifice of the lamb, which prefigured the death of Christ, so we in our Easter celebrate the memory of Christ's resurrection, which took place on the Lord's Day. Whenever, however, the fourteenth day of the Moon of the first month falls on a Sunday, the Church directs that the solemnity of Easter be transferred to the following Sunday, on which the twenty-first day of the Moon of the first month falls. Two reasons above all are given for this by the Fathers and by other writers. First, so that the Lenten fast should not be broken on the fourteenth day of the Moon; or — if it is not broken then but on the [xiii]. [?] — printed thus; the sense requires the fifteenth] day of the Moon, as the ancient Fathers wished — so that we should not be compelled to fast on a Sunday along with the Manichaeian heretics and then begin the Easter festival on the following Monday. That it was not permitted to break the fast before the fourteenth day of the Moon of the first month is plain from Eusebius, *Ecclesiastical History* V, chapter 23, where he says:

In the provinces of Asia no small question arose, deriving as it were from an ancient custom of theirs, in that they thought Easter must at all costs be celebrated on the fourteenth day of the Moon, that is, when the Jews are commanded to sacrifice the lamb — maintaining as a necessity that on whatever day of the week the fourteenth of the Moon fell, the fast had to be broken; although such a custom had never been observed in any other churches whatever.

Blessed Ambrose teaches the same in his letter to the bishops of Aemilia, in these words:

Hence, if it should happen — as it will happen shortly — that the fourteenth day of the Moon of the first month falls on a Sunday, then, since we ought neither to fast on a Sunday nor to break the fast on the thirteenth day of the Moon, when it falls on a Saturday (a day on which the fast is above all to be kept, as the day of the Passion), the festival of Easter is to be deferred to the following week.

The Venerable Bede also writes as follows on the same matter, in his book *On the Reckoning of Time*, chapter 57:

It is therefore fitting to attend carefully, so that whenever the fourteenth day of the Moon falls on a Sunday, we defer the Paschal feast-day to the following week, for two reasons. First, so that we do not break the fast on the [?] day of the Moon when it is found to fall on a Saturday, which is not consistent and which the Law itself does not command; and second, so that we are not forced to fast on a Sunday when the Lord's Day [?] falls on the fourteenth day of the Moon, thereby doing something unseemly and unlawful.

And so on. Then, so that we may never celebrate Easter together with the Jews, nor agree with the Quartodeciman heretics, who taught that the Mosaic Law was to be observed alongside the Gospel.

5 That Easter must be celebrated on a Sunday — and on the first Sunday after the fourteenth day of the Moon of the first month, that is, after the Jewish Passover — can be established from many authorities of the holy Fathers and from the decrees of councils. First, that it is not to be celebrated on the fourteenth day of the Moon along with the Jews, but on a Sunday, was laid down by St. Pius, pope and martyr, tenth from blessed Peter, around the year of the Lord 159, in a decretal letter, in these words, as given in *De Consecratione*, distinction 3, chapter *Nosse*:

We would have you know that the Lord's Passover is to be celebrated yearly on a Sunday.

And a little later:

Hence we too establish by apostolic authority that all are bound to keep the same, because we ourselves keep it; nor may you in any way depart from the head.

[Margin: Decree of St. Pius, pope and martyr, on celebrating Easter on a Sunday.]

St. Victor, likewise pope and martyr, fourteenth from blessed Peter, around the year of the Lord 198, in his letter to Theophilus, bishop of Caesarea, which is found in *De Consecratione*, distinction 3, chapter *Celebritatem*, lays down still more clearly that Easter must be celebrated not on any Sunday whatever, but on the one that follows the fourteenth day of the Moon of the first month. He writes:

That the festival of holy Easter is to be kept on a Sunday our predecessors have already laid down, and we have directed that it be solemnly celebrated on that same day; for it is not fitting that the members should disagree with the head, or act otherwise. And let that same festival be celebrated from the fourteenth day of the Moon of the first month up to the twenty-first of that same month.

[Margin: Decree of St. Victor, pope, on celebrating Easter on the Sunday after the fourteenth day of the Moon of the first month.]

Besides this, the same has been confirmed and sanctioned by various councils. For in the first council after the Apostles — held at Caesarea in Palestine at the urging of St. Victor, the supreme pontiff just mentioned, by a number [?] of bishops, and presided over by Theophilus, bishop of that city, Narcissus, bishop of Jerusalem, and Cassius, bishop of the church of Tyre — the decree ran as follows, as we read in Eusebius, *Ecclesiastical History* V, chapter 23:

Let assemblies of bishops and councils be convened throughout each of the provinces, and, letters having been exchanged between them, let them all together confirm one single doctrine of the Church: that it never be lawful to celebrate the Lord's Paschal mystery except on the Sunday on which the Lord rose from the dead, and that on that day alone the Paschal fast is to be broken.

Concerning this decree the same Theophilus writes as follows in his synodal letter, where he explains more openly that Easter falls on the Sunday after the fourteenth day of the Moon:

It was established in that synod that Easter should be observed from the eleventh day before the Kalends of April to the twelfth before the Kalends of May, and that no one has leave to cross those limits either before or after. Likewise let the divine precept concerning the Moon be kept: the command given through Moses was laid on you, from the fourteenth day of the Moon to the twenty-first. It is agreed, then, that these seven days of the Moon were consecrated for keeping Easter in like manner. Whenever, therefore, within that limit — from the eleventh

before the Kalends of April to the twelfth before the Kalends of May — there falls a Sunday together with one of those seven hallowed days of the Moon, it is fitting for us to observe Easter, as is right, in Christ Jesus our Lord.

From this constitution it is clear that in that period Easter was regularly celebrated from 22 March to 20 April; to which span five further days were afterwards added, since the reckoning [?] necessarily required it, so that Easter can be celebrated up to and including 25 April. For the first month is not the one in which the Sun traverses the whole of Aries — as the Fathers in that synod of Caesarea seem to have wished — but the one whose fourteenth day of the Moon falls on one of the days from 21 March inclusive, on which the equinox falls, up to 18 April inclusive. From this it follows that Easter can be duly celebrated on 25 April, as I shall say a little further on.

[Margin: Decree of the Council of Caesarea in Palestine on celebrating Easter after the fourteenth day of the Moon of the first month.]

Next, in that most famous synod of Nicaea — three hundred and eighteen bishops distinguished for holiness and innocence of life, with the legates of the Apostolic See sent there by Pope Sylvester present, and Constantine the Great, at whose expense it was held — the same thing was decreed with solemn rite, or rather confirmed and renewed, by the common consent of all. On this matter, in the letter sent by that synod to the church of Alexandria and to the brethren living in Egypt, Libya, and the Pentapolis, these words occur, as Socrates reports in *Ecclesiastical History* I, chapter 6, and Theodoret in *Ecclesiastical History* I, chapter 9:

As to the common agreement about celebrating the most sacred feast of Easter, know that by your prayers the controversy raised on that matter has been prudently and satisfactorily settled: so that all the brethren who live in the East, and who used formerly to imitate the custom of the Jews in observing that feast, will henceforth follow with one accord, and zealously, in celebrating it, the Romans, ourselves, and all of you who from the earliest times have held the same practice in keeping it that we hold.

The Emperor Constantine the Great himself also wrote an elegant letter on the same subject to the churches, and it is reproduced by the same writers in the passages cited.

Finally, the same was afterwards confirmed and enjoined under pain of anathema in the synod of Antioch, and in the Council of Chalcedon of 630 bishops, held under Leo the Great, and in a great many other councils.

[Margin: The decree of the Council of Nicaea on the celebration of Easter is confirmed by the Council of Antioch, by Chalcedon, and by others; the Council of Nicaea confirmed rather than instituted it.]

Now although those words of the Council of Nicaea do not explicitly state on what day the most holy Easter is to be celebrated, but seem only to indicate that it is not to be kept along with the Jews, it can nevertheless be understood from them clearly enough that the custom of the Roman Church, and the enactment of the Roman pontiffs Pius and Victor — by which Easter is directed to be celebrated on a Sunday from the fourteenth to the twenty-first day of the Moon — were confirmed and renewed. For the letter plainly indicates that all the Easterners, who had previously celebrated Easter with the Jews on the fourteenth day of the Moon, had with one accord embraced the Roman practice, which perpetually keeps it on the Sunday after the fourteenth of the Moon. That this was the mind of that great council concerning the celebration of Easter — indeed that a canon was issued on the matter in that same council — has been taught by almost innumerable writers on ecclesiastical matters. Among them the Venerable Bede confirms it in explicit terms in many places, and especially in Book 3, chapter 25, of the *Ecclesiastical History of the English People*, where, in a debate about the right celebration of Easter, he brings in a certain Wilfrid, who, ordered by the king to speak, began thus.

[Margin: Bede's view: that the Council of Nicaea renewed the ecclesiastical decree on celebrating Easter on the Sunday after the fourteenth day of the Moon of the first month.]

The Easter that we keep (he is speaking of celebrating Easter on the Sunday after the fourteenth day of the Moon, as is clear from what follows) we have seen kept by all at Rome, where the blessed Apostles Peter and Paul lived, taught, suffered, and were buried; and so in Italy, and so in Gaul, and so on.

Then a little later:

But Peter, when he was preaching at Rome, mindful that the Lord rose from the dead on the first day of the week and brought the world the hope of resurrection, understood that Easter was to be kept in such a way that, following the custom and the precepts of the Law, he always

waited, just as John did, for the fourteenth day of the Moon of the first month to rise toward evening; and when it had risen, if the Lord's Day (which was then called the first day after the Sabbath) was to come on the following morning, he began on that very evening to celebrate the Lord's Easter, just as we all do today. But if the Sunday was not to come on the next morning after the fourteenth day of the Moon, but on the sixteenth, or on any other day of the Moon up to the twenty-first, he waited for it, and on the preceding Saturday evening began the sacred solemnities of Easter; and so it came about that the Sunday was kept only from the fifteenth day of the Moon to the twenty-first. And this evangelical and apostolic tradition does not abolish the Law but rather fulfils it, in which it was commanded that Easter be observed from the fourteenth day of the Moon of the first month at evening up to the twenty-first day of the Moon of that same month; and to the keeping of this observance all the successors of St. John in Asia after his death, and the whole Church throughout the world, were converted. And that this is the true Easter, and that this alone is to be celebrated by the faithful, was not newly enacted by the Council of Nicaea but confirmed, as ecclesiastical history teaches.

[Margin: The view of St. Ambrose on the celebration of Easter from the decree of the Council of Nicaea.]

Blessed Ambrose likewise writes as follows about the same Paschal solemnity in Letter 83, to the bishops of Aemilia:

That it takes no ordinary wisdom and understanding to determine the Paschal reckoning, both divine Scripture instructs us and the learning of our forefathers, who, meeting at the synod of Nicaea, among those decrees of the faith as true as they are admirable, also gathered together the most expert calculators concerning the festival in question and drew up a reckoning of nineteen years, establishing a kind of cycle, so that the pattern for future years should not fluctuate. This cycle they called the [Greek: ἐννεαδεκά-τηρίδα (enneadekatērida, "nineteen-year period") — small italic type, printed with a line-break hyphen after ἐννεαδεκά-], following the principle that we ought not to fluctuate about such a festival on some empty opinion, but that, the true reckoning once ascertained, the devotion of all should so concur that on one and the same night everywhere the sacrifice may be offered for the Lord's resurrection.

Further on, expounding more clearly what was decreed in the synod of Nicaea, he adds:

Two things are to be observed in the solemnity of Easter: the fourteenth day of the Moon, and the first month, which is called the month of new things.

And somewhat later, having shown that Easter is to be celebrated on a Sunday, he says again:

The month begins not according to common usage, but according to the practice of the experts, from the equinox, which is the twelfth day before the Kalends of April, and so on.

In this letter St. Ambrose declares two things chiefly. First, that by the decree of the Council of Nicaea Easter is to be celebrated on the Sunday after the fourteenth day of the Moon of the first month, and that the first month begins from the equinox. By these words he explains that the first month is the one whose fourteenth day of the Moon falls on the equinox — that is, on 21 March — or next follows it. For when he says that the first month begins from the equinox and not before, he does not mean that the new moon of the first month must be taken from the equinox, but the fourteenth day of the Moon. Otherwise Easter could never have been celebrated before 4 April, since on that reckoning the earliest of all the Paschal fourteenth days of the Moon would fall on 3 April — whereas in the same letter he plainly teaches that in his own time, on the ruling of the Council of Nicaea, Easter was celebrated in the month of March. And that he meant the Sunday after the fourteenth day of the Moon is to be taken, is quite clear. For in the same letter he asserts that Easter is to be deferred to the following week when the Sunday falls on the fourteenth day of the Moon, as I set out above from this same letter of Ambrose. In the second place he teaches that the Fathers of the Council of Nicaea decreed that the fourteenth day of the Moon of the first month should be sought by means of the nineteen-year cycle of the golden number, since they entrusted the arrangement of it in the calendar to men most expert in the art of calculation — namely to Eusebius, bishop of Caesarea, and to the Alexandrians of Egypt.

[Margin: The care of the cycle of the golden number was entrusted by the Council of Nicaea to Eusebius of Caesarea and to the Alexandrian Egyptians.]

Bede states the same thing more plainly in his book *On the Reckoning of Time*, chapter 42, where he writes in these terms:

Eusebius, bishop of Caesarea in Palestine, was the first to draw up the scheme of the nineteen-year cycle, for finding the fourteenth days of the Moon of the Paschal feast and the day of Easter itself, since the Moon of any given age returns after that span of time to the same day of the solar year: not that Egypt, or the rest of Christ's Church throughout the East, had until then been unable to find the Moon's course or the Paschal day correctly, but because the results, which in those times were worked out year by year with labour and sent out through the world, used more often to come into question, whereas once a cyclical rule had been fixed for good they could be learned more easily and observed always without any scruple of doubt.

To this may be added that the same Bede, in his book *On the Reckoning of the Computus*, chapter 16, teaches that Eusebius, bishop of Caesarea in Palestine, was the first to draw up the scheme of the nineteen-year cycle; and he repeats the same in Book 5, chapter 22 [?], of the *Ecclesiastical History of the English People*, from the letter of Abbot Ceolfrid to King Nechtan, where these words occur:

And so, by the equinoctial rising of the Sun, after the completion of the fourteenth day of the first month — all of which we have received as to be observed from the Law — we further await, at the Gospel's prompting, the time of the Lord's Day in that same third week; and only then do we celebrate the votive feasts of our Easter, to show that we do not now venerate the shaking off of the ancient yoke of Egyptian servitude, but that we honour with devout faith and love the redemption of the whole world, prefigured in the liberation of God's ancient people and completed in Christ's resurrection, so as to signify that we rejoice in the most certain hope of our own resurrection also, which we believe will come to pass on that same Lord's Day.

Now this computus of Easter which we set before you to follow is contained in the nineteen-year cycle, which long ago — that is, in the very times of the Apostles — began to be observed in the Church, especially at Rome and in Egypt, as I said above; but through the industry of Eusebius, who takes his surname from the blessed martyr Pamphilus, it was more distinctly set in order, so that what until then used to be sent out through all the churches each year by the bishop of Alexandria could thereafter, once the series of the fourteenth days of the Moon had been gathered into order, be known very easily by everyone.

From all these testimonies it plainly follows that by the Church's precept Easter is to be celebrated on no other day than the first Sunday after the fourteenth day of the Moon of the first month.

[Margin: That the practice of celebrating Easter on the Sunday after the fourteenth day of the Moon of the first month began in the times of the Apostles, and is an apostolic tradition.]

6. Moreover, that this is no new decree of popes and councils, but that from the very beginning of the infant Church this practice flourished continuously at Rome and in most other churches — that Easter should be celebrated not with the Jews on the fourteenth day of the Moon but on a Sunday — and indeed that it was so handed down by the Apostles, seems clear enough from several of the authorities I have adduced. For the letter of the Council of Nicaea states in explicit terms that the Romans, the Alexandrians, and the Egyptians had held that manner of celebrating Easter from the earliest times. It is understood still more clearly from the passages of Bede, since he says that blessed Peter, when he was preaching at Rome, understood that Easter was to be kept in this way; that this practice is an evangelical and apostolic tradition; and further that it began to be so observed in the Church in the very times of the Apostles, especially at Rome and in Egypt.

Abbot Ceolfrid [Ceolfridus Abbas] affirms the same thing in the plainest terms, in the same Bede, book 5 of the *Ecclesiastical History of the English People*, chapter 22, where the passage runs as follows: *If then it could be brought about that Sunday always fell on the fifteenth day of the first month — that is, on the fifteenth Moon — we could celebrate Easter at one and the same time with God's ancient people, though distinguished from them in the kind of sacraments, just as we hold one and the same faith. But since the day of the week does not run on the same track as the Moon, apostolic tradition decreed — the tradition preached at Rome by blessed Peter and confirmed by Mark the Evangelist, its interpreter, at Alexandria — that when the first month has come, and within it the evening of the fourteenth day, Sunday should further be awaited, from the fifteenth day to the twenty-first of that same month.*

[Margin: That Easter has always been celebrated, and ought to be celebrated, on the first Sunday after the fourteenth Moon, even if that Sunday falls on the fifteenth Moon: against certain people who deny it.]

EUSEBIUS too, in book 5 of the *Ecclesiastical History*, chapter 22, testifies that all the other churches scattered throughout the whole world, the Asian churches excepted, kept the custom of breaking their fasts on no other day than the one on which the Saviour rose from the dead. Furthermore, St Cyril, Patriarch of Alexandria, in all his festal letters [sermones Heortistici] — which are very numerous, and in which he announced to the people each year the solemn Lenten fast, the feast of Easter, and Pentecost — declares in every case that Easter is celebrated on such a day of the month, on a Sunday, in accordance with the evangelical or apostolic traditions. Again, the same St Cyril, in his letter to Pope Innocent I (cited by Johannes Stöffler [Ioannes Stoflerinus] in the *Calendarium Romanum*, proposition 32, near the beginning, and by Albert Pigge [albertus Pighius] in his book on the reckoning of the celebration of Easter and the restitution of the calendar, proposition 8), says this: *The holy mystery of Easter and its sacred solemnity would have remained inviolate, just as it was handed down by our Saviour and by the Apostles, had not the perversity of certain foolish men defiled it, along with the other sacraments of the faith, etc.* And there is no room for doubt that he is speaking of an Easter celebrated on a Sunday after the fourteenth Moon of the first month, since he consistently maintained that it must be so celebrated, on the teaching of Theophilus, his uncle and predecessor in the see of Alexandria — as is clear from the festal letters, in which he invariably sets before the people that Easter is to be celebrated on a Sunday.

FINALLY, this is confirmed beyond question by the letter of Proterius [Protherius], Bishop of Alexandria, to blessed Pope Leo I, who had arranged through the Emperor Marcian [Martianus] that the Bishop of Alexandria should expound Theophilus's Paschal cycle more exactly. The passage in that letter reads as follows — as Venerable Bede reports in his book *On the Reckoning of Time*, chapter 42, and at the very beginning of his little book on the equinox addressed to Wicthed [Vuichenredum], and as Johannes Stöffler and Albert Pigge also report in the places cited: *The letters of your affection gladdened me, which our brother and fellow bishop Victorius brought in dutiful service. For it was fitting that such writings should be sent to the Apostolic See by the bishop of the Church of Alexandria — writings that would show that it was by the teaching authority of the blessed Apostle Peter that the Egyptians learned the computation of the Paschal feast from the beginning, through blessed Mark his disciple; and it is agreed that the Romans learned it in the same way, etc.* It is perfectly clear that in this letter the words concern the celebration of Easter after the fourteenth Moon of the first month, since that is how it has always been celebrated at Rome and at Alexandria. Therefore, when Proterius says that the Romans learned this from St

Peter and the Alexandrians from St Mark, it is plain that he is asserting that Easter must be observed in this way by apostolic tradition.

BUT to leave the point still better established — that Easter has always been celebrated, especially in the Roman Church, and ought to be celebrated, on the Sunday next after the fourteenth Moon of the first month, even if that Sunday falls on the fifteenth Moon (which some people in our own day, obstinately and on I know not what principle, have dared to deny) — we set out the following authorities for consideration. Venerable Bede, in his book *On the Reckoning of Time*, chapter 58, after teaching that the Sunday which falls after the fourteenth Moon is the Paschal day of the Lord's Resurrection, adds a little later: *And if it could be brought about that in every year the fourteenth Moon fell on a Saturday, the time of our Paschal observance would differ in nothing from the Legal one. For we too, like them, according to the ordinances of the Law, would sacrifice at evening on the fourteenth Moon of the first month, and eat the flesh of the spotless lamb, and sprinkle its blood on our doorposts to drive off the destroyer — that is, celebrating the solemnities of Baptism and of the Paschal Masses, we would pass over spiritual Egypt; and at the dawning of the morning, on the fifteenth Moon of the same month, we would enter upon the first day of Unleavened Bread; and we would complete with due reverence the seven lawful days of that same festival, from the morning of the fifteenth day to the evening of the twenty-first of that month — that is, from Easter Sunday to the Sunday of the octave of Easter. But since the same day of the Moon rolls round onto different days of the week, the result is that we, who on account of the Resurrection of our Redeemer are taught to reserve the beginning of Easter for Sunday, sometimes have our festival take its start on the seventh day after the beginning of the Legal unleavened bread. Do those who hold the contrary not see that in this passage Bede teaches in the plainest terms that Easter Sunday can fall on the fifteenth Moon — and that Easter is then celebrated entirely correctly?*

THE SAME author states it most clearly in chapter 60, where he says: *For whereas in the Old Testament the Paschal season was prescribed to be observed by three indications drawn from the arguments — namely, that it be celebrated after the equinox, in the first month, and in the third week of that month, that is, from the evening of the fourteenth Moon, which is the beginning of the fifteenth, to the evening, that is, to the limit of the twenty-first — a fourth rule in the observance of it has been laid upon us from the time of the Lord's Resurrection: that when, the equinox being past, we have seen the fourteenth Moon of the first month rise in the evening, we should not leap at once to keeping Easter, but should await the Lord's Day, on which he deigned by rising again to accomplish the Pasch itself, that is, the*

passage from death to life, from corruption to incorruption, from punishment to glory; and then at last on that day celebrate the Paschal solemnities as is fitting. And a little later: Whenever, then, we have Sunday immediately upon the coming of the fourteenth Moon, our Paschal season is in no way out of tune with the Legal one, although we keep the solemnities of the same Pasch with other kinds of sacraments. But whenever that same Sunday falls on the second, third, fourth, fifth, sixth, or seventh day from that point, not even then do we abolish the Law or the prophets; rather we fulfil them with the sacraments of evangelical grace. This custom of the Church he confirms from Theophilus, Bishop of Alexandria, as well; and he repeats and drives the same point home in chapters 61 and 62 and often elsewhere. Moreover, in book 4, chapter 5 of the *Ecclesiastical History* he records that it was decreed in a certain English council, in the king's presence, that Easter should be celebrated on the Sunday after the fourteenth Moon of the first month. And that decree was observed not only then, but in every age thereafter.

BLESSED ISIDORE of Seville, who flourished about the year of the Lord 630, shows the very same thing in book 1 of *On the Ecclesiastical Offices*, chapter 31, when he says: *Easter is celebrated in the third week of the Moon, that is, on whatever day falls as Sunday from the fifteenth to the twenty-first.* See how openly he teaches that Easter is to be celebrated on the day of the fifteenth Moon, if that is a Sunday. For if anyone should be so shameless as to maintain that, on Isidore's view, Easter is to be celebrated on the Sunday after the fifteenth Moon up to the twenty-first Moon, he will be forced to admit that in a year in which Sunday falls on the fifteenth Moon there is either no Easter at all — since up to and including the twenty-first Moon no other Sunday occurs — or

else that Easter must be celebrated on the twenty-second Moon, which blessed Isidore does not allow, since he does not extend Easter Sunday beyond the twenty-first Moon.

NEXT, Hrabanus [Rabanus], Archbishop of Mainz, who lived about the year 855, in book 2 of *On the Instruction of the Clergy*, chapter 39, repeats those very words of Isidore exactly, and enumerates all the Paschal limits which we see observed in the Church to this day as received from the Council of Nicaea, in these words: *The beginning of the first month is to be observed from the eighth day before the Ides of March to the day of the Nones of April; but the fourteenth Moon of Easter is to be sought from the twelfth day before the Kalends of April to the fourteenth before the Kalends of May. Further, Easter Sunday runs from the eleventh before the Kalends of April to the seventh before the Kalends of May, and this from the fifteenth Moon to the twenty-first. It can therefore never happen that the fourteenth*

Moon of the first month falls before the vernal equinox, which occurs on the twelfth day before the Kalends of April. Do you see that Hrabanus teaches that Easter can be kept on the eleventh day before the Kalends of April — that is, on 22 March — after the first Paschal fourteenth Moon, which he places on 21 March, and therefore on the fifteenth Moon? And a little further down the same Hrabanus quotes those words of Venerable Bede which we reviewed a moment ago from the book *On the Reckoning of Time*, chapters 58 and 60.

RUPERT [Rupertus], Abbot of Deutz, who wrote about the year 1124, in book 6 of *On the Divine Offices*, chapter 27, speaking of the Easter of Christians, has these words: *For it is of divine authority, and handed down from the ancient Law of Moses, that it should not be celebrated before the full moon of the first month — that is, where the full Moon first occurs after the vernal equinox.* Here he excludes from the celebration of Easter only the fourteenth Moon of the first month, and not the fifteenth Moon, that is, the full moon.

WILLIAM DURAND [Gulielmus Durantus], in the *Rationale of the Divine Offices*, book 8, chapter 12, carefully expounds all 29 Paschal fourteenth Moons, teaching not once but repeatedly, and not in one way but in several, that in the Church the first Paschal fourteenth Moon is the twelfth day before the Kalends of April and the last the fourteenth before the Kalends of May, and that after these Easter must always be celebrated on a Sunday. There too he affirms in explicit terms that the Easter of the Hebrews is always celebrated on the fourteenth Moon, and that our Easter falls on the following Sunday. He therefore never excludes the fifteenth Moon, if it is a Sunday, from being the day on which Easter may be kept. In book 6, chapter 78 as well, he asserts that by the Lord's command Easter is to be celebrated at the full moon — that is, not indeed before the full moon, but on some one of the seven days of the third week, which begins after the fourteenth Moon of the first month, on the fifteenth Moon or full moon.

FINALLY, all the computists, as many as have written on the celebration of Easter, consistently maintain this very thing by common consent: for instance Johannes de Sacrobosco in the *Computus Ecclesiasticus*; Johannes Stöffler in the *Calendarium Romanum*; Campanus in the *Computus Maior*; and Paul of Middelburg [Paulus Middelburgensis], Bishop of Fossombrone, in his *Paulina* (for so he entitled that immense volume on the correct celebration of Easter and on the true day of Our Lord's Passion) — in many places, but especially not far from the beginning of book 12, where he writes as follows: *We therefore, in the computation of the Paschal Moon, shall call the day of the opposition of the luminaries the fifteenth Moon; and if it falls on a Sunday, we shall note that Easter*

is to be celebrated on that same day, in accordance with the canon established by the holy Fathers in the Synod of Nicaea, by which Easter is ordered to be celebrated on a Sunday from the fourteenth Moon to the twenty-first — that is, on the first Sunday after the fourteenth Moon. What could have been said more clearly than this? For since he calls the opposition of the luminaries, or full moon, the fifteenth Moon, it is clearer than the light of the Sun that he does not call the fourteenth Moon the full moon. Let those who try to exclude the fifteenth Moon from the Paschal solemnity observe how great the agreement is among the Fathers and the other writers. In none of them will they find that Easter is to be celebrated on the Sunday after the fifteenth Moon of the first month; it is always after the fourteenth Moon. And will there be anyone who supposes that these few adversaries — not to call them detractors — have seen more than all those most learned men who, from the first beginnings of the infant Church down to our own times, most diligently preserved the teaching on the celebration of Easter as if handed on from hand to hand from the Apostles? As for Campanus, who alone of all the writers on the computus calls the Paschal fourteenth Moon the full moon, he does so because the end of the fourteenth Moon — when the Jews were commanded to eat the lamb — is the beginning of the fifteenth Moon, or full moon; or else because the fourteenth Moon as found from the cycle usually falls on the day of the full moon, for the reason that the cycle ought to indicate the first or new Moon one day after the true new moon in the heavens. This last point we took the greatest care to observe in the Roman Calendar, so far as the cycle allows. The proof is that Campanus then goes on to testify and teach openly that Easter is to be celebrated on the Sunday after the fourteenth Moon reckoned from the new moon of the cycle.

FROM all this, then, it is established that Easter can rightly and lawfully be celebrated — indeed, that by the decrees of the Fathers it must without qualification be celebrated — on the fifteenth Moon, that is, at the opposition of the luminaries, if that day is a Sunday. And we see that this custom has always been preserved in the Church, in the East as much as in the West. For down to our own age Easter has always been celebrated on the first Sunday after the fourteenth Moon; and how often this was done from the times of the Council of Nicaea up to the Gregorian correction we shall review a little further on.

7 BUT in fact all the authorities we have adduced are to be understood of the fourteenth Moon reckoned from the new moon of the cycle, as Campanus teaches (for this is the only refuge left to our adversaries, that they should say the fourteenth Moon must be counted after the day of the new moon which the cycle supplies). This is plainly established from the golden number inscribed in the

ecclesiastical calendars by Abbot Dionysius [Dionysius Exiguus], which the Church always used down to the year 1582, when the calendar was corrected; and from the prescribed Paschal limits, all of which fall on the fourteenth day of the Moon reckoned inclusively from the golden number of the year proposed. Thus between the golden number xvi, which was set against the eighth day of March (below, in chapter 9, where we treat of setting out the golden number in the calendar, you will find the old calendar with its golden numbers, which the Church used before the year of the correction), and the 21st day of the same month, on which by the Church's usage the fourteenth Moon of that golden number falls, you see that 12 days are interposed; and that from the 8th day inclusive to the 21st day inclusive 14 days are counted. The same reckoning holds for the other golden numbers. Who, then, will be so reckless in his daring as to prescribe — by a new fashion and a new institution — that 15 days be counted from the new moon of the cycle to the Paschal limit? That this is against the canons, the decrees of the Popes, and the teaching of the Fathers is proved most manifestly by this consideration: since from the Council of Nicaea down to these times the first Paschal new moon has been assigned to the eighth day of March, as the unbroken usage of the Church shows, then if Easter had to be celebrated after the fifteenth Moon reckoned from the new moon — as the adversaries contend — it could never have been celebrated on 22 March, since that day is the fifteenth from that new moon; whereas in fact, from the Council of Nicaea down to the correction

of the year, ten Easters were celebrated on 22 March, out of the one hundred and seventy-five that were celebrated on the fifteenth Moon, as I shall show shortly. Nor can they say that the first Paschal new moon ought to be placed on 7 March, since no one ever maintained this, and in fact no golden number was ever affixed to the seventh day so as to mark a new moon there. Again, since the last Paschal new moon in the Church's usage has always fallen on 5 April, if fifteen days were to be counted from it, the Paschal limit of that year would have to be fixed at 19 April, and consequently, if that were a Sunday, Easter would have to be moved to 26 April — which is unheard of and unprecedented. You see, then (I appeal to you, our new lawgivers), that when the fourteenth Moon anticipates the full moon by one day, and that full moon falls on a Sunday, Easter is celebrated by the Church at the full moon itself; and you will be convinced that this was never forbidden. On the contrary, you will find that it was done very frequently from the Council of Nicaea down to the Gregorian correction.

You could easily have learned this too from the old table of movable feasts. For since that table prescribes that Easter be celebrated on the nearest dominical

letter under the golden number — the golden number that indicates the fourteenth Moon, or the Easter of the Jews — who does not see that, if the dominical letter is found next below the golden number (which happens not infrequently), Easter is celebrated on the fifteenth Moon, that is, at the full moon? And so that not the slightest scruple may remain in anyone's mind, and that the whole matter may be clearer than daylight, I have collected in a table, which I shall subjoin presently, 157 years in which Easter was celebrated immediately after the fourteenth Moon reckoned from the new moon. Among these you will find a few years in which Easter preceded the full moon, especially near the times of the Council of Nicaea — namely the years 326, 330, 346, 350, 370, 441, 475, 495, all of them within a span of 170 years, as I shall show below in chapter 18, number 5, when we come to speak of the fourteenth Moon.

Nor indeed did the Church trouble itself greatly over errors of this kind, however they arose, although it was aware of them. It took care of only one thing: that the canon of the Council should be observed uniformly everywhere on earth, the canon by which Easter is prescribed to be celebrated after the fourteenth Moon — even if occasionally, though rarely, on account of the arrangement of the cycle, it was kept before the full moon. From this it follows that the cycle must, so far as possible, be so ordered in the calendar that the Paschal fourteenth Moons anticipate the full moon by one day only, and never by two, save most rarely (since no cycle can avoid that, as I shall show in the proper place). This the cycle of the epacts in the Gregorian calendar achieves with the utmost exactness: for in it, over the 551 years to be counted after the correction of the year 1582 — namely in the year 2133 — Easter is celebrated before the mean full moon only once, and in 3418 years only fifteen times, as we shall set out in chapter 18, number 7, and chapter 22, number 4, where we shall write on this matter more fully. In the cycle of the golden number of the Council of Nicaea, by contrast, this very thing happened eight times in a span of 170 years, as I said a little earlier, and that indeed close to the times of that Council, when the cycle was approved — although four of those years did in some manner reach the mean full moon on the day of Easter, since it occurred before sunset, as is clear from the little table which we shall set out in chapter 18, number 5. That this is not absurd, since no cycle can avoid it, we shall show in chapter 22, number 4.

BUT here are the 175 years for you, in which Easter was celebrated on the fifteenth Moon, so that you may learn by example as well how rashly you have tried to tear up the settled state of the Christian Easter, which you could not budge. And so that no one may have any doubt about the reliability of this table, it has been put together from the great Dionysian cycle of 532 years and from the

old table of movable feasts. I have moreover set beside those same years the corresponding golden numbers and dominical letters, so that it may be plain to anyone that Easter was indeed celebrated on the fifteenth Moon in accordance with the canons. The letter A, further, signifies April and M March, written next to the day of Easter.

Years of the Lord [Anni Domini]	Golden numbers [Aurei numeri]	Dominical letters [Literæ Dominicales]	Easter [Pascha]	Years of the Lord	Golden numbers	Dominical letters	Easter
326	4	B	3 A	496	3	G F	14 A
330	8	D	19 A	499	6	C	11 A
340	18	F E	30 M	509	16	D	22 M
346	5	E	23 M	519	7	F	31 M
350	9	G	8 A	520	8	E D	19 A
370	10	C	28 M	523	11	A	16 A
374	14	E	13 A	536	5	F E	23 M
394	15	A	2 A	540	9	A G	8 A
398	19	C	18 A	543	12	D	5 A

Years of the Lord [Anni Domini]	Golden numbers [Aurei numeri]	Dominical letters [Literæ Dominicales]	Easter [Pascha]	Years of the Lord	Golden numbers	Dominical letters	Easter
401	3	F	14 A	560	10	D C	28 M
414	16	D	22 M	563	13	G	25 M
425	8	D	19 A	564	14	F E	13 A
441	5	E	23 M	567	17	B	10 A
445	9	G	8 A	570	1	E	6 A
465	10	C	28 M	584	15	B A	2 A
469	14	E	18 A	587	18	E	30 M
475	1	E	6 A	588	19	D C	18 A
489	15	A	2 A	590	2	A	26 M
493	19	C	18 A	594	6	C	11 A
495	2	A	26 M	604	16	E D	12

Years of the Lord [Anni Domini]	Golden numbers [Aurei numeri]	Dominical letters [Literæ Dominicales]	Easter [Pascha]	Years of the Lord	Golde n numb ers	Domini cal letters	E a s t e r
							M

Table continues.

Continuation of the table of years in which Easter fell on the fifteenth day of the Moon. Each printed page carries two side-by-side panels, each with four headed columns — Anni Domini. / Aurei numeri. / Literæ Dominicales. / Pascha. — transcribed below as columns 1–4 and 5–8 of a single table. Rows are grouped in fives by horizontal rules. In the Pascha columns the day-number and the month letter (A = April, M = March) are separate printed sub-fields, joined here by a space. Leap years carry two dominical letters.

Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .	Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .
614	7	F	31 M	1052	8	E D	19 A
618	11	A	16 A	1055	11	A	16 A
638	12	D	5 A	1068	5	F E	23 M
658	13	G	25 M	1072	9	A G	8 A
662	17	B	10 A	1075	12	D	5 A
665	1	E	6 A	1092	10	D C	28 M
682	18	E	30 M	1095	13	G	25 M
685	2	A	26 M	1096	14	F E	13 A
689	6	C	11	1099	17	B	10

Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .	Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .
			A				A
709	7	F	31 M	1102	1	E	6 A
713	11	A	16 A	1116	15	B A	2 A
733	12	D	5 A	1119	18	E	30 M
743	3	F	14 A	1120	19	D C	18 A
753	13	G	25 M	1122	2	A	26 M
757	17	B	10 A	1126	6	C	11 A
760	1	F E	6 A	1136	16	E D	22 M
763	4	B	3 A	1146	7	F	31 M
767	8	D	19 A	1150	11	A	16 A
777	18	E	30 M	1170	12	D	5 A
780	2	B A	26 M	1190	13	G	25 M
783	5	E	23 M	1194	17	B	10 A
784	6	D C	11 A	1197	1	E	6 A
787	9	G	8 A	1214	18	E	30 M
804	6	G F	31 M	1217	2	A	26 M
807	10	C	28	1221	6	C	11

Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .	Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .
			M				A
808	11	B A	16 A	1241	7	F	31 M
811	14	E	13 A	1245	11	A	16 A
828	12	E D	15 A	1265	12	D	5 A
831	15	A	2 A	1275	3	F	14 A
835	19	C	18 A	1285	13	G	25 M
838	3	F	14 A	1289	17	B	10 A
848	13	A G	25 M	1292	1	F E	6 A
851	16	D	22 M	1295	4	B	3 A
852	17	C B	10 A	1299	8	D	19 A
858	4	B	3 A	1309	18	E	30 M
862	8	D	19 A	1312	2	B A	26 M
872	18	F E	30 M	1315	5	E	23 M
878	5	E	23 M	1316	6	D C	11 A
882	9	G	8 A	1319	9	G	8 A
902	10	C	28 M	1336	7	G F	31 M
906	14	E	13 A	1339	10	C	28 M

Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .	Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .
926	15	A	2 A	1340	11	B A	16 A
930	19	C	18 A	1343	14	E	13 A
933	3	F	14 A	1360	13	E D	5 A
946	16	D	22 M	1363	15	A	2 A
953	4	B	3 A	1367	19	C	18 A
957	8	D	19 A	1370	3	F	14 A
973	5	E	23 M	1380	13	A G	25 M
977	9	G	8 A	1183	16	D	22 M
997	10	C	28 M	1384	17	C B	10 A
1001	14	E	13 A	1390	4	B	3 A
1007	1	E	6 A	1394	8	D	19 A
0021	15	A	2 A	1404	18	F E	30 M
1025	19	C	18 A	1410	5	E	23 M
1027	2	A	26 M	2414	9	G	8 A
1028	3	G F	14 A	1434	10	C	28 M
1031	6	C	11 A	1438	14	E	13 A

Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .	Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .
1041	16	D	22 M	1458	15	A	2 A
1048	4	C B	3 A	1462	19	C	18 A
1051	7	F	31 M	1465	3	F	14 A

Table continues on the next page.

Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .	Anni Domini .	Aurei numeri.	Literæ Dominicales.	Pas cha .
1478	16	D	22 M	1553	15	A	2 A
1485	4	B	3 A	1557	19	C	18 A
1489	8	D	19 A	1559	2	A	26 M
1505	5	E	23 M	1560	3	G F	14 A
1509	9	G	8 A	1563	6	C	11 A
1529	10	C	28 M	1573	16	D	22 M
1533	14	E	13 A	1580	4	C B	3 A
1539	1	E	6 A				

End of the table. Parsing notes: the left panel's last group holds only three rows and the right panel's only two; the remaining cells are blank on the page.

NOR was this practice peculiar to the Latin — that is, the Western — Church: to celebrate Easter immediately after the fourteenth day of the Moon reckoned from the new moon, whenever the next following day is a Sunday. The Eastern Church has always kept the same custom and keeps it still, as is clear from the tables and

rules for finding the movable feasts that the Orientals use — the very tables Ignatius, Patriarch of Antioch, brought to Rome in the time of Gregory XIII and laid before all of us who had been assembled to correct the calendar. Consider, then: does anyone fail to see (as I said a little earlier) that if Easter could not be celebrated on a Sunday falling on the full moon, that is, on the fifteenth day of the Moon, it would have to be celebrated on the twenty-second day of the Moon? And that if 19 April were a Sunday falling on the Paschal full moon, the feast would have to be put off both to the twenty-second day of the Moon and to 26 April? Yet this was never heard of, and it is flatly contrary to the canons, as what I have said makes plain. Those who assert that Easter cannot be celebrated at the full moon are therefore wrong by the whole breadth of the sky.

8 THESE points settled — that Easter is to be celebrated on the Sunday after the fourteenth day of the Moon of the first month — it must now be explained rather more carefully that the first month is the one whose fourteenth day of the Moon falls on the day of the equinox or next follows it, as I maintained above. For there is no shortage of people who think the first month should be defined otherwise; and I take this to have slipped from them through carelessness rather than as a view they would defend tooth and nail. They call that month the first whose new moon is nearer to the day of the equinox. But they are very much mistaken. Since it can happen that two new moons are equally distant from the day of the equinox, one before it and one after, it would be doubtful — and rightly so — which of the two should be chosen for the celebration of Easter. Suppose, for example, the equinox set on 21 March. If the mean full moon, that is, the mean opposition of the luminaries (for in this business the Church uses the mean motions rather than the true, as I shall show in chapter 4), falls at noon on 21 March, then the mean new moon that precedes the day of the equinox will be as far from noon of the 21st as the mean new moon that follows that same day is from it — since each is distant from the mean full moon by about 14 days, 18 hours, 22 minutes, 2 seconds, as I shall set out in its proper place. Hence anyone could quite rightly be in doubt which of those two new moons belongs to the first month. This is seen still more clearly from the nineteen-year cycle of the golden number, which the Catholic Church used from the Council of Nicaea down to this correction of the calendar. In that cycle golden number 8 was set both against 6 March and against 5 April. Since each of these days is equally far from the 21st — for 14 days lie between 6 and 21 March just as between 5 April and 21 March — it will be ambiguous whether the new moon of 6 March is the Paschal one, or rather the one that occurs on 5 April.

[Margin: The error of certain writers in defining the first month.]

THE SAME thing appears from the cycle of the epacts of the new calendar, which I shall later show to be correctly distributed through the days of the months. For since the ordinary epact 25 is likewise placed both against 6 March and against 5 April, the same ambiguity about choosing the first Paschal month will necessarily arise; and the difficulty will be greater when epact 24 is in use, because its new moon, falling on 7 March, is nearer to the equinox — that is, to 21 March — than the new moon of the same epact that falls on 5 April, since only 13 days are interposed between 7 March and the 21st, while 14 days lie between 5 April and 21 March. On the view of those who hold that the first month is to be measured from the new moon, the new moon of 7 March would be the Paschal one, and the other, falling on 5 April, would have to be rejected as not Paschal. That is altogether false, and contrary to the most ancient practice of the Catholic Church, which rejects the new moon of 7 March and establishes the following one, falling on 5 April, as the Paschal new moon — for no other reason than that the fourteenth day of the earlier one falls on 20 March, before the equinox, and must therefore be referred to the last month of the year.

MORE CORRECTLY, then, the first month is described by that fourteenth day of the Moon which either falls on the day of the equinox or next follows it. This is what I have done, and it was approved before me by a good many ecclesiastical writers — above all by the Venerable Bede [Bede], who was thoroughly practised in this matter, both elsewhere and in the few passages I have thought worth bringing forward to confirm my view. In *De temporum ratione*, chapter 49, writing against a certain Victorius who computed the first month and the Paschal fourteenth Moons differently, he says: *We know that the Egyptian discipline of calculation, which both in your judgment (he is addressing Victorius) and by the consent of the universal Church appears truer, is to be followed by all: namely, that the beginning of the first month runs from the eighth day before the Ides of March to the day of the Nones of April; that the fourteenth Moons of Easter run from the twelfth day before the Kalends of April to the fourteenth before the Kalends of May; and further, that Easter Sunday is to be sought from the eleventh before the Kalends of April to the seventh before the Kalends of May, and this on the fifteenth day of the Moon up to the twenty-first.* By these words Bede plainly places the earliest Paschal fourteenth Moon on the day of the equinox and the latest on 18 April; and he accordingly holds that the first month — that is, the Paschal month — is

the month whose fourteenth day of the Moon either falls on the day of the equinox or next follows it. He states the same more openly in chapter 43 of the same book, in these terms: *Both kinds of year (that is, common and embolismic) take their start, as was said above, from the opening of the first month, which the*

Hebrews call Nisan — that is, from the kindling of the Paschal Moon. The beginning of that month must be governed by this rule: that the fourteenth Paschal Moon never precede the vernal equinox, but proceed as lawful either on the equinox itself, that is, on the twelfth before the Kalends of April, or after it has passed. Hence it comes about that the first beginnings of the lunar year are to be sought from the eighth day before the Ides of March to the day of the Nones of April. That fourteenth Moon itself, occurring at earliest on the twelfth before the Kalends of April and at latest on the fourteenth before the Kalends of May, makes the day of the Paschal feast to be sought from the eleventh before the Kalends of April to the seventh before the Kalends of May. He repeats the same in chapter 57, in these words: For the Sunday that occurs after the fourteenth Moon is itself the Sunday of the Paschal Resurrection; and that fourteenth Moon shows its advance over the earth at earliest at the equinox, that is, on the twelfth before the Kalends of April, and at latest on the twenty-ninth day from then, that is, on the fourteenth before the Kalends of May, at evening. Finally, in chapter 60 he speaks in this way: Of this first month, and of its seven days of unleavened bread, the rule is now such that the fifteenth Moon which occurs after the equinox is to be understood as belonging to the first month, and that this Moon, taking whichever Sunday of the seven days it may up to the twenty-first, yields a day fit for the joys of the Paschal feast.

9 SINCE, THEN, as I have said, the Roman and Catholic Church observes three things, laid down by the decrees of the Holy Pontiffs and of the Councils, in the right celebration of Easter, on which the other movable feasts depend — the vernal equinox, the fourteenth day of the Moon of the first month, and the first Sunday after that fourteenth Moon — it must now be explained what method the Church has followed so that the sacred solemnity of Easter should be carried out by the faithful everywhere at the same time: that is, so that those three requisites of its celebration should be determined by everyone in the same way, with no discrepancy whatever between them.

[Margin: The three things to be observed in the celebration of Easter, from the decrees of the Pontiffs and the Councils.]

10 FIRST, then, so that no one should be left free to go astray in fixing the equinox, the fourteenth day of the Moon of the first month, and the Sunday for celebrating Easter, the Fathers of the Council of Nicaea laid down that 21 March be assigned to the vernal equinox, since the equinox then occurred on or about that day. It follows that any fourteenth day of the Moon which precedes 21 March is reckoned to belong to the last month of the year and not to the first, and is therefore unfit for the celebration of Easter; whereas the fourteenth day of the

Moon that falls on 21 March — or, if it does not fall on that day, the one that occurs first after 21 March — is the lawful one for celebrating Easter. From this it is clear that all the new moons occurring from 8 March to 5 April inclusive, and only these, are Paschal. They are 29 in number: 24 in the last 24 days of March, and 5 in the first 5 days of April. This holds even though, before the restoration of the year, the Church made use of only nineteen new moons within those 29 days, because the nineteen golden numbers it employed occupied only 19 days. Now, however, after the emendation of the calendar, the epacts show that a new moon can occur on each one of those 29 days. That all 29 of these new moons, and only these, are Paschal is perfectly certain: for of those 29 lunar months not one has its fourteenth day of the Moon before 21 March, on which the equinox has been fixed; rather, the fourteenth day of each follows the day of the equinox I have named — except for the first new moon, whose fourteenth day falls on the 21st itself. By contrast, the fourteenth day of any other new moon earlier than 8 March anticipates the equinox; and finally, in the case of any new moon following 5 April, another Paschal fourteenth day of the Moon will already have preceded it, as is evident.

Since this is so, it is clear that Easter can and must always be celebrated on some day from 22 March to 25 April: so that the first and earliest Easter can be celebrated on 22 March, and the last and latest on 25 April. The whole Paschal solemnity thus has a range of 35 days, of which the first 10 belong to the end of March and the remaining 25 to the beginning of April. For when 21 March is a Saturday and the fourteenth day of the Moon which is the first Paschal one falls on it, the solemnity of Easter will fall on the following Sunday, that is, on 22 March; and Easter cannot lawfully be celebrated before this day, nor has it ever been celebrated on this day since the Council of Nicaea. Likewise, when 18 April is a Sunday and the fourteenth day of the Moon which is the last Paschal one falls on it, Easter will be celebrated on the next following Sunday, namely 25 April; and after this day Easter cannot be celebrated without scandal, by decree of the Council of Nicaea. These Paschal limits we have received as established by the authority of the Council of Nicaea, and they follow necessarily from the placing of the equinox on 21 March, as I have said.

[Margin: On how many days of the year, and on which, Easter may be celebrated, by the decree of the Council of Nicaea.]

11 NEXT, so that no further dissension should arise among Christians over the new moons — and so over the fourteenth days of the Moon — such as had occurred from the Council of Nicaea down to about the time of the Emperor

Justinian, but that all should declare the first day of the Moon on the same days, the 19 golden numbers received from the Alexandrians were distributed through the days of the calendar by the abbot Dionysius [Dionysius Exiguus] by this device: each was set against that day of any given month on which the new moon fell in the year in which that golden number was in use. So while golden number 1 was current, the new moon occurred throughout that year on the day of each month against which golden number 1 was set. While golden number 2 was current, the new moon occurred on the day that had golden number 2 set against it, and so on for the rest — so that the new moons always fell on different days of any given month, just as all 19 golden numbers were assigned to different days of the months, until 19 years had run out; after which the golden number was again 1, and the new moons therefore returned to the same days, and so on. But you will find more on this subject where I discuss the lunar year.

[Margin: That the new moons were investigated by means of the golden numbers distributed through the calendar before the correction of the year, so that everyone might celebrate the neomenias on the same days.]

LASTLY, so that it should be plain to all when Sunday fell, the cycle of the dominical letters was instituted, containing 28 years, so that once the dominical letter of any year was known there should be no divergence among Christians in the observance of Sunday and therefore in the celebration of the Paschal solemnity.

[Margin: That the cycle of the dominical letters was devised so that there should be no dissension over celebrating on the Lord's Day.]

CAPVT II.

Why the calendar had to be corrected, and in what its correction consists.

EVERYTHING that we have said the faithful must observe in the celebration of Easter was rightly and wisely settled by the authority of the Council of Nicaea, and confirmed by other councils and by the supreme pontiffs. But the vernal equinox in our own day no longer fell on 21 March, but on about the 11th; and the new moons, likewise, were not correctly indicated by the golden numbers set out in the calendar, but four days and more later than they should have been (I shall explain the cause of this in its proper place). The result was that Easter has again and again, right down to the present, been celebrated contrary to the enactment of the Council of Nicaea.

[Margin: That the equinox and the new moons, at the time when the calendar was being corrected by Gregory, did not fall on the same days on which they occurred in the time of the Council of Nicaea.]

For since, as we said above, the first lunar month — and so the Paschal month — is the one whose fourteenth day of the Moon either falls on the day of the vernal equinox or next follows it, and since the vernal equinox in our own day, before the correction of the calendar, fell around 11 March, it follows that every fourteenth day of the Moon from 11 March to the 20th was, by the prescription of the Council of Nicaea, Paschal — that is, belonging to the first month. Yet the Church always rejected these, as though they belonged to the last month and preceded the equinox, because along with the Council of Nicaea she had fixed the vernal equinox to 21 March. Hence it came about that whenever the fourteenth day of the Moon fell after 10 March and before the 21st — which happened whenever one of these golden numbers was in use: 3, 6, 8, 11, 14, 19 — Easter in our own day, before the restoration of the calendar, was celebrated in the second month. And this error, creeping on imperceptibly day by day, would have gone further still as time advanced, had no remedy been applied through the correction of the year — so far that in the course of time every Paschal fourteenth day of the Moon would have been rejected as useless, and Easter would always have been celebrated in the second month, indeed at last in the third, the fourth, and so on, and even in high summer. That would have been utterly absurd and altogether contrary to the decrees of the Fathers. And this would have come about with the passage of time because the equinox climbs perpetually toward the beginnings of the months by one day in the space of 134 years, as I shall show shortly. For this would have brought it about that, when the equinox had receded 29 days from 21 March or more — that is, after the year 4100 — no Easter at all would have been celebrated in the first month.

[Margin: Which lunations[?] declared Paschal by the Council of Nicaea would have been rejected as non-Paschal before the correction of the calendar, on account of the error in the equinox.]

[Margin: When Easter was celebrated in the second month before the correction of the calendar, on account of the error in the equinox.]

2 NEXT, on account of those four days and more by which the new moons, as we said, were indicated later by the golden numbers in the calendar than the facts required, it often happened that Easter was celebrated on the 25th day of the Moon — namely when the fourteenth day of the Moon found by the golden number, which was in truth the eighteenth, fell on a Sunday, and Easter was

accordingly deferred to the following Sunday. But this plainly conflicts with the decrees of the supreme pontiffs and of the Council of Nicaea, which insist again and again that Easter must be celebrated from the fourteenth day of the Moon of the first month exclusive up to the twenty-first inclusive. Indeed, from the year 1500 to the year 1582, in which the calendar was corrected — that is, in the space of 83 years — 54 Easters were not properly celebrated, and only 29 properly. And had the calendar not been restored, in the remaining 17 years up to the year 1600 Easter would have been wrongly celebrated twelve times and correctly only five. Moreover this sort of error, had no remedy been brought against it, would have grown greater thereafter: it would have come about that the most holy feast of Easter was celebrated on the 30th day of the Moon, and indeed at the new moon itself, or on the 1st and 2nd day of the Moon, on the 4th, and so on. And no one fails to see how great an inconvenience this would have brought with it, and how discordant and absurd — not to say ridiculous — the outcome would have been.

[Margin: Had the calendar not been corrected, it would have come about that for a good many years Easter would always be celebrated in the second month, then the third, the fourth, and so on, because of the equinox's ascent toward the beginnings of the months.]

3 FROM this error in the vernal equinox and in the fourteenth day of the Moon it has come about that in this century Easter has very often been celebrated 7, or 28, or 35 days later than the decrees of the Fathers prescribe. This happened in the years 1565, 1568, 1576, and 1579; and the same would have happened, had the calendar not been emended, in the years 1595, 1598, 1603, 1606, 1614, and in a great many others — in all of which the celebration of Easter would have been in error by 35 days and more, to say nothing of the years in which an error of either twenty-eight or seven days would have been committed. All this will be plainly evident from chapter 22, where we have computed the feasts of Easter and the other movable feasts for the 3,401 years from the year 1600 to the year 5000, together with the errors that would have been committed according to ecclesiastical practice if the old calendar had been retained. From all of these, only 265 Easter feast-days are found to be legitimate according to the old calendar, while 3,136 would have been celebrated contrary to the decrees of the Fathers: 581 of them with an error of 35 days, 881 with an error of 42 days, and 49 with an error of 49 days — leaving aside those Easters with an error of 7, 14, and 28 days, which are very numerous. Indeed — and this is the more absurd — after the year 2698 no legitimate Easter at all is found; and this error would in the course of time have swollen to still more days, had the calendar not been corrected.

[Margin: When Easter was celebrated on the 25th day of the Moon before the correction, on account of the error in the new moons found by means of the golden numbers.]

4 BESIDES these drawbacks and absurdities in the keeping of the feast of Easter, many others in other matters would have followed had the emendation of the calendar not been undertaken. For in the first place, the birthday of our Redeemer, which the earliest Fathers celebrated near the winter solstice, would have slipped to the vernal equinox; the day of his Incarnation, which has always been celebrated on 25 March, near the vernal equinox, would have left the vernal equinox behind and slipped to the summer solstice; and finally the birthday of St John the Baptist, which the ancients celebrated near the summer solstice, would have slipped to the autumnal equinox. All of this is absurd and discordant. For that the forerunner of the Son of God was born at the time of the summer solstice, and that the Son of God himself willed to take flesh at the time of the vernal equinox and to be born near the winter solstice, must not be thought devoid of mystery: it is altogether to be judged that this was so ordained from eternity by divine disposition. Many of the holy Fathers affirm this,

[Margin: Had the calendar not been corrected, it would have come about that Easter was celebrated on the 2nd or 3rd day of the Moon and so on, because of the error in the new moons, which were sought by means of the golden numbers.]

[Margin: That because of the error in the equinox and in the fourteenth day of the Moon found from the golden numbers, an error of 7, or 28, or 35 days often occurred in the celebration of Easter before the emendation of the calendar.]

[Margin: That after many years an error of 42 days and more would have been committed in the celebration of Easter, had the calendar not been corrected.]

[Margin: The damage to histories, to chronology, and to the principal celebrations of the year, if the calendar had not been emended.]

and teach it elegantly. The solemnities, therefore, which the Catholic Church has instituted in memory of these events must be kept at the same seasons of the year at which they were foreordained by the divine will. But in our own age, before the calendar was corrected, they were kept at quite different times: for all the feast-days that we call immovable had receded ten full days from the places in which the earliest Fathers had set them — that is, by exactly the number of days by which the equinoxes and solstices had run ahead of their positions in the calendar between the Council of Nicaea and our own time.

TO this must be added that in our times, before the restoration of the year, the new moons and the age of the Moon were never correctly announced in the churches, on account of the imperfection of the golden number — a thing not to be tolerated, since in the primitive Church great account was always taken of the lunar months. Indeed, in the Martyrology it was customary to announce, along with the day of the solar month, the day of the lunar month as well — a practice still commendably preserved in the Church.

LASTLY, because of the imperfect length of the solar year that the Church has always used, all the months were retreating in the calendar: that is, the portion of the year now understood under the name of the month of June, and containing the summer solstice, was creeping little by little toward the month of May, so that, as June retreated, the summer solstice would in the course of time have fallen in May; the dog days, now found in July, would have fallen in June; spring, now in March, in February; and the winter solstice, which now falls in December, in November. Then, with that same error still continuing, the summer solstice would have slipped into April, the dog days into May, spring into January, and the winter solstice into October; and so, step by step, all these would have moved on into month after month. From this it would follow not only that the celebrations of the several feasts were dislodged from their proper places, as we have said, but also that the whole ecclesiastical order hitherto observed in the performance of the divine offices was subverted and altered in an astonishing way. For the divine offices are so ordered and distributed that at fixed seasons of the year certain fixed lessons and histories from Holy Scripture are recited in the canonical hours, and these are assigned to certain months as well. Since, then, all the months were migrating from one part of the year into another and yet another, with no moment of time's intermission — as has been said — if the calendar had remained uncorrected and unemended, who does not see that the lessons and the histories from Holy Scripture would have had to be recited at a different season of the year from the one for which they were instituted? And this must be said much more emphatically of certain prophecies, above all those read at the Ember days in the most holy sacrifice of the Mass. I pass over the fact that, had the calendar not been restored, the histories both of divine and of human affairs and the chronologies would have been thrown into obscurity — works composed by our forebears with such care and diligence, and the knowledge of which usually brings no small help and advantage both to the public and to private persons. No less would those things be disturbed which are written in the books of the ancients on agriculture and navigation. For it is often prescribed that this is to be done in such a month and that in another, that a voyage is to be undertaken on these or those days of the year, while on others sailing is dangerous. None of this

would any longer hold good once the months, as has been said, had changed places among themselves — since they are all referred to the equinox, which used to fall in March. By the same reasoning the sixth month from March would be wrongly named Sextilis, and likewise those that follow, September, October, November, and December: for they would no longer preserve that order reckoned from the vernal equinox, which belongs to the first month and which would have receded from March.

5 THEREFORE, in order that all these drawbacks and absurdities we have listed might be avoided, and that posterity might not fall into greater ones, it was altogether necessary that the year and the calendar be emended — that is, that the vernal equinox be restored to its original seat assigned to it by the Fathers of the Council of Nicaea, namely 21 March, and that the new moons be shown by the numbers set out in the calendar in such a way that their full moons (for the Church takes more account of full moons than of new moons, on account of the feast of Easter, as will be said in its place) should not, so far as can be managed, differ from those which astronomical calculation yields according to the mean motion. But since the equinox could not be restored to its seat except by removing a certain number of days, it followed necessarily that the solar cycle, or cycle of the dominical letters, in use in the Church of God down to this time, had to be interrupted — as will also happen whenever a day is taken from the year in order to keep the equinox in its place. It was necessary, then, to renew this cycle as well, in such a way that by it the dominical letter proposed for any given year could be found after the correction of the calendar just as before, even though a day is sometimes removed from the year. And so the whole business of the correction of the calendar consists in three things: the restoration of the equinox and its retention in its proper seat; the emendation of the new moons; and the renewal of the solar cycle. That these were rightly set in order by Gregory XIII, and by what method it was done, we shall make plain in what follows.

[Margin: The necessity of correcting the calendar.]

[Margin: That the correction of the calendar consists in three things, and what they are.]

CAPVT III.

Why the vernal equinox was recalled to 21 March in particular, and by what method.

AMONG those who have written on the emendation of the calendar, opinions about the restoration of the equinox varied. Some judged that it should be left on the day on which it was found at the time of the correction, namely 11 March. Others maintained that it should be recalled to the 25th of that month, that is, to the day of the Lord's Incarnation, because they held that the Incarnation of the eternal Son of God took place at the vernal equinox. Most, finally, on more prudent counsel, argued that it should be restored to 21 March, where it was found to fall, near enough, at the time of the Council of Nicaea. And Gregory XIII rightly embraced their opinion, inasmuch as it

[Margin: The various opinions about the restoration of the equinox.]

involves less novelty and change — as will be evident from the drawbacks of the other opinions. For if the equinox had been left around 11 March, where it stood before the correction, or had been recalled to 25 March, or to any other day whatever different from 21 March, the Church would have had to alter all the Paschal limits established by the authority of the Council of Nicaea, and to renew all the breviaries and missals — since all these are arranged and ordered as though the vernal equinox fell perpetually on 21 March. No one doubts how great a disturbance this would have brought upon the faithful, had they seen Easter and the other movable feasts celebrated on different days now from those on which the ancient Fathers celebrated them; and especially since it would have brought no small loss upon churchmen, on account of the waste of very nearly innumerable ecclesiastical books, and the immense expense that would have been required for buying new books used in the worship of God. For most churches and monasteries have libraries of such books valued at many thousands of gold pieces, and all of these would have been rendered useless. To this must be added that, since all the Eastern churches — which are numerous, and of which the greatest account had to be taken — most religiously observe the canon on the celebration of Easter confirmed at the Council of Nicaea, the vernal equinox could not be recalled to any day with greater convenience for all the churches than to 21 March, where it stood at the time of the Council of Nicaea. For in this way the decree on the celebration of Easter enacted by the Fathers in that council has remained wholly intact and unimpaired. Finally, since the greater part of the martyrs, doctors, confessors, and virgins whose feasts the Church devoutly venerates in grateful memory flourished around the time of the Council of Nicaea — the martyrs a little before, under Decius and Diocletian, those most cruel persecutors of the Church of God, and the confessors at the very time of the council or a little after, in the days of Basil, Gregory of Nazianzus, John Chrysostom, [John] Damascene, Ambrose, Augustine, Jerome, Leo, Gregory the

Great, and when the deserts of Egypt and Palestine were crowded with a countless multitude of monks and anchorites under Paul, Antony, and Hilarion, those most holy hermits — the equinox could not be recalled to a more suitable time than to the time of the Council of Nicaea, so that the feast-days of the saints should recur and be celebrated each year at seasons that fit, that is, not far from those on which they lived on earth and illuminated the Catholic Church by their example and their teaching. For if it had been carried back to the time of the Lord's Incarnation, or retained in the place where it was found before the correction, the dates of all those saints would have been thrown into confusion and disorder.

[Margin: Which opinion Gregory XIII followed in restoring the equinox.]

[Margin: The drawbacks of the other opinions about the restoration of the equinox.]

2 THE equinox, moreover, was restored by Gregory XIII, Supreme Pontiff, to 21 March by the removal of ten days from the month of October in the year 1582 (which for that reason will be called the year of the correction, and will stand as the most celebrated of years among posterity), in such a way that after the fourth day of October, which is sacred to St Francis, the fifteenth was immediately taken up in place of the fifth, the ten days lying between being wholly omitted for that year. For by this means it came about that the vernal equinox fell, in the following year 1583, and will fall in the years thereafter, ten days later than before this correction; and so, whereas it previously occurred around 11 March, it is now seen to fall near the 21st, just as in the times of the Council of Nicaea.

[Margin: By what method the vernal equinox was restored to 21 March.]

[Margin: That the year 1582 is to be called the year of the correction, because in it the correction of the calendar was carried out by Gregory XIII.]

3 THIS restoration was also made by the removal of ten days from a single month, namely from October, and not by the omission of ten intercalary days over 40 years, nor by the subtraction of those same 10 days from 10 months, taking one day away from each month — which some would have preferred. This was partly because much could have occurred in 40 years to impede the correction, especially on account of the frequent change of supreme pontiffs over so many years; and partly also because the cycle of the dominical letters would have had to be interrupted more often, which would have been an inconvenience — whereas in our present restoration it has been interrupted only once, and that of necessity.

[Margin: Why ten days were removed all at once from the year 1582, and not one by one in single years or months.]

IF anyone should further ask how it came about that the equinox abandoned its original seat, that is, 21 March, and climbed to the 11th of that month, let him understand that the cause of this is that Julius Caesar, whom the Roman Catholic Church has followed, assigned more than was right to the length of a single year. For he made the solar year 365 days and 6 hours. And because in the civil and political year, which comprises only whole days (for the hours left over beyond the days cannot be written into it, or the beginning of the year would always be shifting), he left out those six hours which in four years make up a whole day, he decreed that in every fourth year one day, made up of 24 hours, should be intercalated, and that the year should then be one of 366 days — which they called bissextile. But the true solar year, which they call the tropical year, is not so long: it is shorter by several minutes of an hour, comprising, according to the Tables of Alfonso, King of Spain, 365 days and only 5 hours 49 minutes 16 seconds. This length of year is in a way midway between the greatest and the least length of the year. For, as we shall say more fully in chapter 6, the more skilled astronomers have observed that the solar years are unequal: they affirm that the year was greatest in the times of Hipparchus and Ptolemy, least in the age of al-Battānī [Albategnius], and in a way intermediate around the times of King Alfonso, and that it has now again reached very nearly its greatest length. And so the Roman year, which is in use in the Church, exceeds the Alphonsine year — which we have said is roughly midway between the greatest and the least — by 10 minutes and 44 seconds of an hour. From this it comes about that by just so many minutes and seconds the equinoxes and solstices run ahead of their places in every Julian year; for when the Sun, by its own motion, according to the Alphonsine tables, returns to the same equinoctial or solstitial point from which it departed, there are still lacking, to complete the Julian year, those 10 minutes and 44 seconds of an hour which we have mentioned. Accordingly, by the same tables, the equinoxes and solstices run ahead of their places by one full day in about 134 years, and by about three days in 402 years. But if the length of the year that the Church uses agreed in every respect with the annual motion of the Sun, no anticipation of the equinoxes and solstices would be observed, but they would recur on the same days of the year.

[Margin: Why the equinox anticipates[?] its seat in the calendar.]

[Margin: The length of the year according to Julius Caesar and the Church.]

[Margin: The length of the year according to the Alphonsines.]

[Margin: When the year was greatest and when least, and when it was of middling measure.]

[Margin: By how much the Roman year exceeds the Alphonsine year.]

[Margin: In how many years the equinox anticipates one day, according to the Alphonsines.]

IF anyone should also wish to know why that removal of ten days was made from the year 1582, in the month of October, and not rather from some centesimal year, or from some other bissextile year, and not in October but in some other month whatever — for this might well trouble an inquisitive reader — the explanation is ready to hand. Those ten days could indeed have been removed from any year whatever, and from any month as well, but the year 1582 was chosen in particular because

[Margin: (continued from the preceding page) Why the correction of the calendar was set in the year 1582, and in October rather than in another month.]

— because at that point everything necessary for the correction had at last been settled and completed. The replies of the Emperor, of all the kings, princes, and republics, and of the principal universities had already been delivered to the Supreme Pontiff and examined with the greatest care by the mathematicians convened for the reform. And so, to keep the restoration of the calendar — which all the Christian princes and states had praised and approved so warmly — from being deferred any longer, the Supreme Pontiff decided to assign the year 1582 to the correction that had been so long desired.

AS for its being done in October rather than in some other month, there was no other reason, and no further mystery is to be looked for here: that month was simply judged the fittest for the business, since it has more days free of saints' feasts. The result was that removing ten days from it caused less disturbance and confusion for churchmen in the discharge of the divine offices. Admittedly few saints' feasts are celebrated in February, March, and April either; but because Septuagesima, Lent, and the Paschal season fall in those months, it was judged that they should not be deprived of ten days, so that those seasons, which the Church observes with the deepest devotion, might run their course in unbroken sequence. There was a further consideration: if, for example, Septuagesima had then been kept on 14 February by the new calendar, with the ten preceding days omitted, there would have been only four Sundays after Epiphany, and the remaining two could not have been inserted before Advent, since in that year there would have been only twenty-four Sundays after Pentecost.

[Margin: Why in the year 1583, in the more remote regions, the correction was ordered to be made in February rather than in another month.]

6 SINCE some provinces had not yet removed the ten days from October of the year 1582 — copies of the new calendar could not be conveyed to them so quickly — it was very wisely decided that in the following year, 1583, without waiting for October, the ten days should be taken out of February, so that those peoples should not remain any longer at odds with the Roman Church in the numbering of the days. For although in that year those who had not yet reformed the calendar would have kept Easter on the same day as we did, they would still have differed in the number of the day, since we would have kept Easter on 10 April and they on the last day of March. There is therefore no reason for anyone to be troubled or anxious in searching out why the Supreme Pontiff wished the restoration of the calendar to take place in the year 1582 in particular, in the month of October, and in the year 1583 in the month of February.

[Margin: If the new calendar had been corrected in February of the year 1582, it would have given Easter more correctly than the old one did.]

7 THERE are nevertheless some who think themselves more intelligent and more knowledgeable than everyone else, and who — in order to find some fault with this Gregorian correction — do not scruple to assert that the ten days were removed from October of 1582 and not from February because, if the calendar had been restored in that year before Easter, Easter would have been celebrated contrary to the decrees and enactments of the Fathers; and that the reform was postponed to October precisely so that this should not be noticed by everyone at the very outset of the correction. In this they are wonderfully mistaken, and (as the saying goes) miss the whole sky. For if the new calendar had begun before Easter, Easter would have been kept lawfully according to the canons, whereas by the old calendar it was kept contrary to the decrees of the Fathers. In the year 1582 the golden number was 6, which would have given the epact 26 if the ten days had been taken out of February; and that epact places the Paschal term, that is, the fourteenth day of the Moon, on 17 April — on a Saturday. Hence, the following Sunday falling on the 18th, Easter would have been celebrated after the full moon, both mean and true; for the mean full moon by the tables of Giovanni Antonio Magini [Magini] occurred then on 17 April at about hour 8 after noon, and the true one on the same day at about hour 15 after noon — all of which agrees with the canons. But in that very year, before the correction, Easter was kept on the twenty-second day of the Moon, that is, in the fourth week, contrary to the enactments of the Fathers and the councils; whereas by the new calendar it

would have fallen on the fifteenth day of the cycle's Moon, that is, at the beginning of the third week, in which alone Easter can lawfully be kept, as we have said.

CAPVT III.

Ecclesia cur posthabitis motibus veris apparentibusue, medios tantum, siue æquales, aut potius cyclos in mobilium solemnitarum celebratione vsurpet.

(Why the Church, setting aside the true or apparent motions, uses only the mean or uniform motions — or rather cycles — in the celebration of the movable feasts.)

[Margin: That the Church considers only the mean motions, for many reasons.]

NOW that the equinox has been restored to its original seat, where the Fathers of the Council of Nicaea found and fixed it, a method and a means also had to be laid down for keeping it in that seat so far as this is possible, so that it should not, as before, abandon its place and creep forward little by little toward the beginnings of the months, and so throw the calendar back into the same errors. To make that method clearer, it must first be explained rather carefully which motions the Church takes into account and applies in the observance of the movable feasts. Once this has been set out, it will be perfectly plain how rashly and groundlessly certain men have tried to introduce the true motions into the Church. For the Church sets aside the true motions of the Moon and the Sun — these belong rather to astronomers — and considers only the mean and uniform motions, or rather cycles, which advance in a steady and even order. Many reasons can be given for this.

[Margin: 1st reason. Because the mean motions are equal and uniform, and therefore suited and convenient to ordinary people's grasp; whereas the true motions are unequal and irregular.]

FIRST, because the true motions are unequal, now faster, now slower, whereas the mean motions are always equal and uniform, and can therefore easily be reduced to a cycle, which the true motions cannot. Since, then, easy rules had to be handed down for finding the equinox, the new moon, and the Paschal full moon — rules that anyone, even one wholly untrained in and ignorant of astronomy, could grasp and hold without great labour and without any knowledge of astronomical tables (for the whole people cannot be compelled to master astronomy, which would be something new and unheard of, and in fact quite impossible) — the mean motions had to be adopted rather than the true, especially because error can more easily creep into the true and apparent

motions than into the mean and uniform ones. Nor does it much matter that the true motions really exist in the heavenly bodies, while the mean ones have been devised by astronomers only in thought and by art,

so that they may investigate the true motions through the mean. For the Church is not bound, and never has been, by the exact laws and motions of the stars; it is enough for her if she can follow the motion of the Sun or the Moon with what is called a "rough-and-ready wit" [pingui Minerua], provided it does not depart far from the truth. This is clearly demonstrated by the most ancient practice, continued and carried on from the primitive Church down to our own age.

[Margin: 2nd reason. Lest a perpetual seedbed of quarrels and discords be stirred up in the Church, if the true motions were observed, on account of the variety of the astronomical tables.]

2 NEXT, because if the Church chose to use the true motions, there would be a perpetual seedbed of discord and quarrelling among the faithful of Christ over the celebration of the most holy Easter, on account of the variety and disagreement of the astronomical tables and the differing hypotheses of the motions, some contending that these tables should be followed, others those — just as today we see some using the Alphonsine tables and others the Prutenic tables, drawn from the doctrine of Nicolaus Copernicus, in investigating the motions of the stars. The result would be that different people would observe different equinoxes and new moons, and so would not celebrate Easter at the same time — which would be thoroughly discordant and absurd, not to say ruinous.

[Margin: 3rd reason. Because to this day no tables have existed[?] that would exhibit[?] the true motions[?] without error over many years.]

3 THIRD, because down to this day no tables have been drawn up by astronomers by which the true motions of the stars can be ascertained and known with certainty and without any error for every period; rather, everyone has always compiled tables agreeing with the observations of his own time, which after a long lapse of time were found to fall away from the truth — and this because no one has yet known and explored the periods of the celestial motions exactly and thoroughly. Ptolemy, the leader and prince of astronomers and a most skilful investigator of the celestial motions, compiled some 1470 years ago, more or less, tables agreeing with his own observations, by which at that time the motions of the heavens were computed with complete certainty and beyond doubt. Then, since experience had shown that these no longer presented the celestial motions

accurately, other tables succeeded them, called Alphonsine because they were drawn up by astronomers about 360 years ago at the expense and by the care and diligence of Alfonso, King of Spain; by these the motions were found more surely in that age than by Ptolemy's tables. Into their place there have now been substituted, in our own time, the tables of Nicolaus Copernicus, commonly called the Prutenic, because by the consensus of nearly all astronomers they agree with the celestial phenomena far more exactly than the Alphonsine. And so perhaps, after many centuries, our descendants will detect other periods of the celestial motions from their own observations, and will accordingly frame new hypotheses, and so substitute other new tables for the Prutenic ones.

[Margin: Why the Prutenic tables, which everyone uses today, may be judged uncertain.]

For who would dare affirm for certain that the Prutenic tables will agree with the motions of the heavens at every period, when he sees that the tables of Ptolemy — a most excellent astronomer, and one deservedly set before all others — are now defective and imperfect, though in those times they were the most perfect of all? And this all the more since the Prutenic tables rest on hypotheses that are highly uncertain, indeed absurd and repugnant to the common opinion of mankind, and against which all natural philosophers argue. There is this too: not one complete period of the anomaly of the precession of the equinoxes — on which Copernicus founds the whole inequality of the solar year — has yet been finished and completed; so that one may reasonably doubt the truth of tables built on that anomaly, and whether, when one period is complete, the next will correspond to the preceding one in every respect.

Since this is so, who will be so shameless and bold as to wish to bind the Church of God to such uncertain and deceptive precepts and tables of the astronomers? Surely no one, I think — unless someone should care to say that the Church ought to embrace now these tables, now those, according as she notices that at this or that time they agree with the motions of the heavens. But that would be nothing else than to call everything into doubt, since astronomers themselves could scarcely agree which tables were the more to be trusted. So too in our own age we see that there are most excellent mathematicians who hold that, in the motion of the Sun and the Moon, the Alphonsine tables are more to be believed than the Prutenic.

[Margin: That the equinox was rightly[?] restored to 21 March by the removal of ten days is confirmed by the observations of a certain[?] very accurate mathematician.]

I RECALL indeed that a distinguished mathematician found, by his own observation with exquisite instruments and with careful diligence, that in the year 1586 the vernal equinox — that is, the entry of the Sun into Aries — occurred on 10 March at hour 9 minute 2 after noon by the old calendar; whereas the Alphonsine tables give it nearly six hours earlier, and the Prutenic about 13 hours later. Here it plainly appears that the Alphonsine calculation comes closer to the observation just mentioned than the Prutenic or Copernican does. By the new calendar that same observed equinox falls on 20 March at hour 9 after noon, and so is assigned[?] to the following day, the 21st. From this it is also plainly evident that this correction of the calendar was excellently managed in removing ten days from the year 1582 in order to restore the equinox to 21 March. The same mathematician affirms, in book 1 of his *Progymnasmata* of astronomy to be restored [*Astronomiae Instauratae Progymnasmata*], that from the findings of Hipparchus and of other still older men it can be gathered that the exact length of the equinoctial year, taken universally, is 365 days 5 hours 49 minutes or thereabouts — just as the Alphonsine authors assert.

SO in order that this dissension and discord among astronomers might be removed, the Church has, by a most prudent counsel, always rejected the tables of the true motions, leaving them to the curiosity of astronomers, and has judged that the mean motions, which are equal and uniform — or rather cycles that agree very closely with the mean motions — should be used for the solemnities of the movable feasts.

[Margin: That the astronomical tables are of great value, even though they cannot last for a long time.]

I HAVE not brought all this forward because I think the astronomical tables should be rejected altogether as false and worthless. On the contrary[?], I have always judged astronomers worthy of praise, who in various ages have observed the motions of the stars with the greatest labour and study, and with admirable industry have worked out various tables for computing those motions easily — not indeed with perfect exactness, yet so as to fall little short of the truth — and have handed them down to posterity. I contend only this: that the Church should not be tied to the astronomers' fastidious subtleties, since the same tables cannot last long, but different ones must be used from age to age, as we have said. Nor does this detract at all from the dignity and excellence of astronomy, a most noble science; rather it commends it wonderfully, that it has set so great a variety of motions before our eyes so accurately that we come as close as possible to the truth itself.

[Margin: Where the inconstancy of the astronomical tables comes from.]

And what wonder is it that astronomers cannot perfectly grasp by understanding the motions of the heavens, which lie at so great a distance from us, when philosophers have not yet been able to attain complete knowledge of even one substance, however small, here in this lower world?

AND it certainly seems to me that God, best and greatest, the most wise architect of the heavens and the stars, deliberately willed the motions of the planets

[Margin: 4th reason. Because even if the astronomical tables were entirely perfect, the true motions would still be applied in vain, on account of the variety of meridians.]

and the stars to be wrapped in such great difficulties that no mortal could unravel and explain them by his own wit. For who, from the founding of the world down to our own time, has been found so excellent in astronomy as to define the periods of the celestial motions in such a way that after some centuries of years they should not depart at all from the truth — given the small quantities in every planet's period, in excess or in defect, which over a long interval of time introduce no slight error? The purpose, surely, was that we should always find in so admirable a workmanship of the noblest bodies, and in so constant a harmony and concord of their motions, something to marvel at, and should celebrate their creator and mover with unending praise. It is above all on account of the immense mass of the heavens, and their order and motions — in which there always seems to remain something for the most skilful investigators of celestial things to search out with the utmost diligence — that one may judge those words of Ecclesiastes, chapter 3, to have been written: *And he has delivered the world to their disputation*; namely, lest, if men understood perfectly the number, order, and motion of the heavens, they should cease to inquire into and admire the works of God, and their minds, deprived of the exercise, should in a manner grow torpid through inaction.

[Margin: But the true motions would be applied in vain, on account of the variety of meridians.]

4 FOURTH, the Church neglects the true motions and takes up the mean ones, or rather cycles, because even if astronomical tables existed that were absolutely perfect and wholly purged of every error, so that they were free of any fault, it would still be pointless — and without any necessity or usefulness — to employ, in the celebration of the movable feasts, that exact and fussy computation of hours and minutes according to the true motions. For however accurately both

the vernal equinox and the Paschal full moons were computed from the true motions, the variety of regions and meridians would still make that labour useless and vain. When, for instance, the vernal equinox falls at Rome at noon on 21 March, it will fall for certain more easterly peoples on the same 21st at sunset, for others at the middle of the following night — and so will have to be assigned to the next day, the 22nd, and so on. Likewise, if the true full moon then occurs at Rome on 22 March about noon, the same will happen among the nearer eastern peoples about sunset, and among the more distant about midnight, and so on. Hence, if in that year 22 March were a Sunday, Easter would indeed be kept at Rome according to the enactments of the Fathers and the councils; but among the more easterly peoples, especially the more remote, if they must attend to the true motion, it could not be kept, because for them the equinox falls on the 22nd and the time of the full moon has not yet come.

[Margin: 5th reason. Because it is the Church's most ancient custom to observe the mean motions and not the true ones — a custom that ought not to be changed without pressing cause.]

But it is established from the decrees of the Fathers that Easter cannot lawfully be kept on the very day of the equinox, but that the day of the equinox must have gone before; nor before the full moon, lest it be kept on the fourteenth day of the Moon or before the fourteenth. And since it was ordained in the Council of Nicaea that all should celebrate Easter in the month and on the day on which the Roman Church observes it — the same being afterwards confirmed in the Council of Arles and the fourth Council of Carthage, and asserted most clearly and at length by St Ambrose in his letter to the bishops established throughout Aemilia — it plainly follows that the Church cannot take account of the true motion of the luminaries in the celebration of Easter.

[Margin: That it does not much matter, so far as the Paschal feast is concerned, if the equinox does not always fall on 21 March.]

5 FIFTH, on account of the most ancient custom by which the mean motions, or rather cycles, have always been in use in the Church, the true motions being set aside — a custom that ought not to be changed without some pressing necessity. That the Church has not observed the true equinox according to the true motion is clearly demonstrated from the decree of the holy Fathers issued in the Council of Nicaea, in which they laid down for the whole world that the equinox was to be observed on 21 March. But it is obvious that the equinox cannot be tied and bound to a single day, either by the true motion or by the mean. For if in the year immediately preceding a bissextile year it falls on the 21st, it must in the

following bissextile year fall on the 20th, on account of the intercalary day added to February. Again, if in a bissextile year the equinox occurs about noon on some day, the same must necessarily occur in the year immediately following the bissextile at sunset of that same day, and in the second year after the bissextile at sunrise of the next day, on account of those six hours which are omitted in each common year — since in those years only 365 whole days are counted, although nearly six hours are left over in each year. From this it is clearly concluded that the decree can be referred neither to the true nor to the mean motion, but only to 21 March, on which the equinox generally occurred at that period, even though by astronomical calculation it was usually found to fall sometimes before that day and sometimes a little after. The point was that the equinox should not be observed by some on the 21st and by others on another day, if they chose to consult astronomical tables, and Easter accordingly be celebrated at different times — which would be absurd.

[Margin: That God, through Moses, prescribed the observance of the first month, and of the tenth day, and of the fourteenth, in a rustic or simple manner, adapted to the understanding of the whole people of Israel.]

NOR does it much matter, so far as the Paschal solemnity is concerned, whether the equinox falls on 21 March itself, or before it, or after it, provided it is not far from that day. For the Church has never been bound by such precise and subtle rules of the astronomers — since not even the Hebrews themselves, for whom everything was ceremonial, were commanded to observe the true or the mean equinox in the solemnity of the Passover, but only the season at which, by the judgement of the senses, the days become equal to the nights: a period which usually covers three or four days without any great difference.

THIS is gathered plainly enough from Holy Scripture. For God, through Moses, commanded the celebration of the Passover in these words, Exodus 12: *Mensis iste vobis principium mensium primus erit in mensibus anni, &c.* [This month shall be to you the beginning of months; it shall be the first among the months of the year, etc.] And a little later: *Et servabitis eum vsque ad quartam decimam diem mensis huius* [And you shall keep it (the lamb, that is) until the fourteenth day of this month]. Here the words *iste* ("this") and *huius* ("of this") are insisted on again and again; by which God seems to signify that he did not wish to alter the customary form and numbering of the Hebrews' year and months, but only the change of the seventh month into the first — as though it were said: this month, which hitherto in Egypt you have reckoned and named the seventh according to the common usage of the year and not according to astronomical calculation, shall

henceforth be for you the first of the whole year, and in it you shall celebrate the Passover.

[Margin: That the Church is not to be very anxious about true or mean new moons and full moons, since in investigating them she has always used cycles.]

Nor can it be said that Moses, instructed by God, was then ignorant of the true magnitude of both years, solar and lunar, for that would be ridiculous. Rather it should be said that Moses spoke to the understanding of ordinary people, who know no astronomy, since he was addressing the whole assembly of the children of Israel; and that he named the first month not in the astronomical way — namely, when the Sun enters the first point of Aries — but in a quite common and plainly rustic fashion, that is, *Abib* in Hebrew and [Greek: ἀ[?]ιβ — the printed form does not resolve; the month-name Abib transliterated into Greek] in Greek, which in Latin means "the month of the new produce," or "of the crops," since in spring the new crops are gathered in Egypt.

NOW as to investigating the new moons and full moons, the Church does not take much trouble over the true or the

or the mean motion. This is clear from the fact that, in investigating them, she has from the very beginning always used lunar cycles — that is, nineteen-year cycles — which can in no way agree in every respect with the true or the mean motions. For according to the cycles the lunations comprise whole days, whereas according to both the true and the mean motion they contain, over and above whole days, a number of hours and fractions of hours. Add to this that in bissextile years the lunations in the cycle fall one day later after the intercalary day, and no account can be taken of this until a good many years have elapsed, as will become clear below when I set out the theory of the nineteen-year cycle of the golden number. And indeed, so far as the lunar cycle is concerned, the Church in this matter follows not only the Hebrews, the Alexandrians and the Romans, but also the Chaldeans, the Arabs, the Athenians, and the peoples of virtually every age — all of whom, both long before the coming of Christ and afterwards, used lunar cycles for finding the new moons. Paulus de Middelburgo [Paul of Middelburg] sets them all out in Book 2 of his *Paulina*.

[Margin: That in adopting the lunar cycle the Church follows the common practice of antiquity.]

6 SIXTHLY, the same point is confirmed by the authority of many astronomers, and of all who have written from the Church's own usage on matters pertaining to the Roman calendar. Chief among these is Campanus [Campanus of Novara],

who states at the beginning of his larger *Computus*: "The computus is the science of the numbering and division of times" — I use his own words — "according to common observances." And at chapter 15 he teaches that "the computists, leaving the true lunations to the astronomers because of their intractable variability, have concerned themselves only with the mean lunations, on account of their uniformity."

[Margin: 6. Reason. Because various writers and computists testify that they do the same.]

JOHANNES Stoflerinus [Johannes Stöffler] likewise, in his *Calendarium Romanum*, proposition 34, capital letter Z, teaches that the universal Church, from the Council of Nicaea down to the present day, has used for the celebration of Easter the cycle of the golden number taken over from the Alexandrians, who had used it earlier. A little further on he affirms that the golden numbers written in the calendar indicate the days of the mean conjunctions of the luminaries, and so forth. And somewhat later he writes that the orthodox Church, and especially the Latin Church, used the customary lunar cycle instituted by Julius Caesar for finding the fourteenth day of the Moon for Easter even before the Council of Nicaea. He repeats the same thing in many other places.

PAULUS de Middelburgo, Bishop of Fossombrone, likewise writes as follows in his *Paulina*, Book 10, about the middle, a little before the table of equinoxes, after a long discussion of the varying and unequal length of the year: "This variation in the length of the solar year does not, however, hinder our own operation of drawing up a rule for the Paschal solemnity, since the Roman Church in the Paschal computation does not observe the varying motions, or the extreme ones, on account of their variability, but only the mean and uniform ones. Now the mean length of the year, between the greatest and the least, is 365 days, 5 hours, 49 minutes, 16 seconds." And he immediately adds: "Therefore, setting aside this scruple about the equation of the solar year, which is necessary for astrologers, we shall here describe the vernal equinoxes for the first month, suited to the Paschal rule, according to the computation derived from the Alphonsine tables, etc."

7 From all this I believe it is sufficiently established that neither the day of the vernal equinox nor the Paschal fourteenth days of the Moon need be examined by means of ephemerides and astronomical tables of true or mean motion — as some people, relying on I know not what authority, vainly contend — but that it is enough for them to be found by popular rules, easy to grasp and still in use in the Church, such as the cycles are. I would not, however, deny that mean motions

drawn from astronomical tables — not true ones, since the latter are unequal while the former are equal — are of the greatest use in deciding which of all the cycles set out in the calendar most correctly exhibits the Paschal fourteenth days of the Moon. What has been set out in this chapter refutes and overturns all the arguments that are commonly raised against the new calendar by people with little training in the ecclesiastical computus, since all of those arguments test the calendar by true or mean motions, which is beside the point.

[Margin: That the mean motions are useful for deciding which of several cycles more correctly exhibits the fourteenth days of the Moon in the calendar.]

CAPVT V.

Quæ intercalandi ratio adhibita sit, vt æquinocmium prope diem 21. Martij, ad quem est reuocatum, retineatur.

What method of intercalation has been adopted, so that the equinox may be kept near 21 March, the day to which it has been recalled.

So that the vernal equinox may not, with the passage of time, again desert 21 March, the day to which it has been restored, and move back toward the beginning of the month as it did before the correction of the calendar, this method of intercalation has been established: the customary practice of intercalating one day every fourth year is indeed retained, but not all centesimal years are henceforth to be bissextile (although by the usual rule for bissextile years they all ought to be). Rather, the first three centesimal years after 1600 are to be common years — that is, of only 365 days — namely 1700, 1800 and 1900; while the fourth following centesimal year, that is 2000, remains bissextile, of 366 days. Likewise the next three centesimal years, 2160, 2200 and 2300, become common in the same way, and the next fourth centesimal year, 2400, remains bissextile. And so on thereafter, the same order always being kept.

[Margin: 1. What method of intercalation has been adopted, so that the equinox may be preserved near 21 March.]

The rationale of this intercalation, since it is sharply attacked by a good many people — even by some who are not merely ordinary experts, but who consider the matter less [?] carefully than they should — must be explained here somewhat more fully, especially since it is one of the chief points of this correction. My aim is that everyone should understand that no more convenient method of intercalation could have been devised, and that it is therefore criticized unjustly by certain people. To make this plainer, a few things must first

be said about the varying length of the year as determined by astronomers at different periods. To begin from this point, then: the solar year is of two kinds, astronomical and civil.

The ASTRONOMICAL year is the interval of time in which the Sun by its own motion runs through the whole zodiac from west to east, beginning from some fixed point — for instance from the first point of Aries — until it returns to that same point. This interval of time comprises, over and above 365 whole days, 5 hours and some further minutes of an hour, as is sufficiently clear from the astronomers' observations, and as I shall show shortly.

[Margin: What the astronomical year is.]

3 The CIVIL year consists only of whole days: sometimes of 365, and then it is called a common year; sometimes of 366, and then it is called bissextile or intercalary. Nor can the civil year be reckoned in any other way than by whole days, with the hours and fractions of hours disregarded, since it was instituted for the use of the people at large, who do not grasp a reckoning of the year by days with hours and minutes of hours. Such a reckoning of the year could not be laid out in a calendar, nor would it be suitable or adapted for conducting trade and other civil business, or for keeping feast days and duly performing the sacred ceremonies of the Church — because a year counted in that way begins now from noon, now from sunset, now from midnight, now from sunrise, and now from some other moment of the day; whereas in the calendar neither hours nor minutes of hours are entered, but only whole days.

For example: the year 1600, if hours and minutes are taken into account, begins according to the ephemerides of Giovanni Antonio Magini on 20 March at 8 hours 49 minutes 33 seconds after noon. The next year, 1601, begins on the 20th at 14 hours 45 minutes 36 seconds after noon; the year 1602 on the 20th at 20 hours 41 minutes 20 seconds after noon; the year 1603 on the 21st at 2 hours 37 minutes 20 seconds after noon; and finally the year 1604 begins again on 20 March at 8 hours 33 minutes after noon. Here you see that the year never begins at the same moment of time — a state of affairs that can in no way suit the use of the people, unless we want everyone to be trained in astronomy, which is both ridiculous and altogether impossible.

[Margin: What the civil year is.]

[Margin: That the astronomical year does not always begin at the same moment of the same day.]

4 But although this division into days, hours and fractions of hours cannot, as I have said, be carried over into common use, knowledge of it is nevertheless necessary, so that the civil year, consisting of whole days, can from time to time be equalized — now by adding, now by subtracting a single day, made up out of the omitted hours and their fractions — in order that it may agree as far as possible with the astronomical year, and that the Sun may bring about the equinoxes and solstices at roughly the same seasons of the year.

[Margin: That knowledge of the astronomical year is necessary, so that the civil year may be equalized.]

It is for this reason that the Church, following the institution of Julius Caesar, adds one intercalary day to the year every fourth year, making it 366 days, while the other three preceding years comprise only 365. For since the Church, following Julius Caesar's widely accepted rule, sets the astronomical year at 365 days and 6 hours, while the civil year takes in only 365 days, it comes about that in the first civil year 6 hours are lacking to complete the astronomical year, in the second 12, in the third 18, and in the fourth 24 — which make up one natural day. Every fourth year, therefore, must be made 366 days, so that those 24 hours are not neglected. Otherwise the equinoxes and solstices would fall one day later than they are marked in the calendar; after another four years, two days later; and so on, so that in 120 years they would slip toward the end of the year by a whole month, that is by a full 30 days, and would not return to their former seats until after 1460 years. In that span of time the vernal equinox would run in a circle through every month and indeed through every day. Who does not see what confusion of the seasons this would bring?

[Margin: Why every fourth year is bissextile.]

[Margin: That the equinox, if all years were common, would run through all the days of the year in 1460 years.]

5 But since the solar year has been observed by astronomers to be somewhat less than 365 days and 6 hours, the result is that every fourth year more is intercalated than ought to be, since the hours and fractions by which the astronomical year exceeds the civil do not add up to one whole day in four years. Unless, therefore, account is taken of those fractions which in each four-year period fall short of completing a whole day — so that, when they have grown to a whole day, one day is removed from the year, that is, the intercalation is omitted once — the equinoxes and solstices will gradually move forward toward the beginnings of the months, as happened before the correction of the calendar. To

prevent this happening in future, this remedy has been devised: that some year which ought to be bissextile is made a common year of only 365 days, and not an intercalary one of 366, as will be said more fully below.

I cannot sufficiently wonder what came into the mind of the historian Dio when, in Book 43, about the middle, he says that if intercalation is made every fourth year, it is necessary to intercalate one day out of the regular order in the space of 1461 years. For this is not true unless the year is set at 365 days, 6 hours, 0 minutes, 59 $\frac{3}{7}$ seconds — a length of the year which I do not recall having read in any author.

But in order to determine in how many years' space the fractions of hours which in each astronomical year fall short of completing six hours make up one whole day — and therefore in how many years one intercalary day ought to be omitted — we must consider attentively and carefully what has been recorded about the length of the year from the observations of the more famous astronomers.

[Margin: That the intercalation of one day every fourth year is greater than it ought to be; and why.]

[Margin: What is to be done so that the equinox is not anticipated.]

6 Leaving aside, then, the more ancient astronomers: Ptolemy, about the year 130 after the birth of Christ, found by his own observations that the length of the year was 365 days and 6 hours less a three-hundredth part of a day — that is, over and above the whole days, 5 hours 55 minutes 12 seconds.

AL-BATTĀNĪ, about the year of the Lord 880 — that is, 750 years after Ptolemy — found that the year contains 365 days, 5 hours, 46 minutes, 24 seconds.

The ALPHONSINE tables, which were compiled about the year of the Lord 1250, lay down that the year consists of 365 days, 5 hours, 49 minutes, 16 seconds.

[Margin: The length of the year according to Ptolemy.]

[Margin: The length of the year according to al-Battānī.]

[Margin: The length of the year according to the Alphonsine tables.]

These are the most celebrated opinions about the length of the solar year, and from them it is clear that the solar year is now longer, now shorter, since it has been observed differently, and variously at various periods, by the most skilled astronomers. The ancient astronomers were indeed led by a highly probable conjecture to suspect that the solar year cannot always be of the same length,

both because of the unequal and irregular apparent motion of the Sun and because of the irregular motion of the eighth sphere [sphaera octava]; but since this matter cannot be fully known until many centuries have passed, they left us nothing certain about the inequality of solar years.

7 One man alone within human memory, Nicolaus Copernicus, the outstanding mathematician of our age, comparing his own observations most carefully with those of Hipparchus, Ptolemy, al-Battānī and the Alphonsine astronomers, ventured with great skill — using new hypotheses — to demonstrate the increase and decrease of the solar year, and to reduce the year's inequality to a fixed and definite rule. By a calculation drawn from his own hypotheses he found that the solar year, when it has grown to its greatest length, is a little longer than the one Ptolemy determined, namely 365 days, 5 hours, 55 minutes, 57 seconds, 40 thirds; while when it has diminished to its least, it is a little shorter than the one al-Battānī found, that is, 365 days, 5 hours, 42 minutes, 55 seconds, 7 thirds — so that the length of the Alphonsine year is very nearly midway between

[Margin: Copernicus's observations on the inequality of the year.]

the greatest and the least length of the year. On this inequality of the years I shall write more in the following chapter.

8 Since this was the state of the question, it was genuinely difficult for Gregory XIII, that most prudent pontiff, to determine what method of intercalation he should prescribe in order to keep the vernal equinox on 21 March or near it. For the length of the Ptolemaic year required that roughly every three-hundredth year one intercalary day should be omitted, because that year is shorter by a three-hundredth part of a day than the Julian or ecclesiastical year of 365 days and 6 hours, and therefore over a space of three hundred years the equinox moves forward by one day from the seat assigned to it in the calendar toward the beginning of the month. But according to al-Battānī's year, roughly one intercalary day would have to be omitted every hundredth year, since in that span of years the equinox, according to the length of his year, anticipates its own seat in the calendar by about one day. Finally, if the Alphonsine year were taken as the measure, the intercalation of one day would have to be omitted once in about every 134 years. And this variation in intercalating would grow daily, as the varying length of the year lay between the greatest and the least year. Where, then, was the pontiff to turn? What path was he to set before himself to follow?

[Margin: In how many years an intercalary day would have to be omitted according to Ptolemy.]

[Margin: In how many years, according to al-Battānī's year, the intercalation would have to be suspended.]

[Margin: In how many years the Alphonsine year requires the omission of one intercalary day.]

9 Two paths above all were proposed to him by the distinguished astronomers in charge of the business. The first was that, in accordance with the inequality of the solar year, one intercalary day should be removed now at a longer interval of years, now at a shorter, according as the year turned out longer or shorter by Copernicus's calculation (for they judged that his was to be preferred to the others). The second was that, setting aside the inequality of the year, the method of intercalation should be fitted to the Alphonsine year, which is in a way midway between the greatest and the least. Both paths were sent out in the year of the Lord 1577, in the *Compendium of a new plan for restoring the calendar*, to the Christian princes, the commonwealths and the more famous universities, so that after careful and long and thorough consideration it might be deliberated which of the two seemed the more apt and suitable, in order that the supreme pontiff might approve it by his authority as representing the consensus of the whole Christian world. That *Compendium*, of which I have spoken, we have set out at the beginning of this work in exactly the same words in which it was sent to the princes, with nothing altered, both because frequent mention of it must be made and so that its memory may not perish. When the *Compendium* had been read through and maturely considered, all — with at most one or two exceptions — left the whole matter to the pontiff's judgement; and he at length chose the second method, on the advice of the astronomers, chiefly for the following reasons.

[Margin: The two paths of intercalation proposed to Gregory XIII for keeping the equinox on 21 March.]

[Margin: Which method of intercalation was chosen.]

10 FIRST, because in the celebration of Easter the Church must follow something regular and uniform and fixed, and not far from the truth, rather than an exact astronomical computation, since the measurements of years, months and other periods of time must be adapted to the understanding of ordinary people. The first path of intercalation, therefore, seems on no account to be adopted, because it is uncertain, irregular and unequal, seeing that on it the intercalary day would at one period have to be omitted after more years and at another after fewer. And what else would that be than to cast the whole Christian people into inextricable

snare, since they would be perpetually doubtful and uncertain as to when the intercalary day was to be omitted? Nor can it be said that the Church ought to put before the people a table of intercalation in which the years are set down in which intercalation is not to be used; for a conflagration of disagreements and intolerable seditions would be kindled among the astronomers, since each would press his own calculation as the one to be followed in this business — inasmuch as, on the one hand (as I said in the preceding chapter), one man maintains that these tables are to be adopted, and another those.

For what other reason, I ask, did so many disputes and contentions over the celebration of Easter arise between Greeks and Latins from the Council of Nicaea down to the time of the Emperor Justinian, except that in that council those most holy Fathers did not lay down some fixed cycle for the whole Church to observe, but entrusted that care to Eusebius, bishop of Caesarea, and to the Alexandrians? For this is how it came about that the Latins contended that Easter was to be celebrated according to one cycle and the Greeks according to another, until in the time of Justinian the Elder Dionysius Exiguus, the Roman abbot, inscribed the Alexandrian cycle in the Roman calendar, which thereafter all the churches followed with one accord — as was in fact done by the Eastern Church as well as the Western, right down to this Gregorian correction.

If, then, Gregory XIII, that most prudent pontiff, had not prescribed some even and regular formula of intercalation, but had left that care to the astronomers free and unrestricted, so that they might draw up tables from the true motion listing the years in which intercalation was to be suspended — who does not see that there would have been perpetual quarrels and dissensions among the astronomers, each pressing his own calculation upon the Church? But I think I have already shown, in the preceding chapter, more than adequately that true motions are not necessary to the Church.

One definite length of the year, therefore, had to be chosen, so that a rule might be established according to it by which the intercalation would be suspended at some fixed interval of years. For in this way both the common and unlearned people are better provided for, and every occasion of discord among the astronomers is entirely removed.

[Margin: 1. Reason. Why in the correction of the calendar the mean length of the year was adopted.]

[Margin: That an unequal year is not suited to establishing a rule of intercalation.]

THEREFORE, since the year is unequal — greatest, least, and middling or mean — the greatest cannot be adopted for this purpose, because the intercalation would be omitted too rarely, that is, only once every three hundredth year. And although this rule would answer exactly to the Sun's motion at the period when the year had grown to its greatest length, it would nevertheless be very far from the truth when the same year had reached its least length.

For the same reason neither can the least year be suitable for the matter, because it would demand too frequent an omission of the intercalary day, and would answer to the Sun's motion only at the period when the year was running at its least.

[Margin: Why the greatest year is not suited to the equation of the solar year.]

[Margin: Why the least year is not suited to the equation of the solar year.]

The only year fit for this office, therefore, is the one midway between the greatest and the least — such as the Alphonsine is. For whether at some period the year is found to be longer or shorter than the middling one, we shall be able to depart little from the truth if we set up the omission of the intercalary day according to the length of that middle or middling year, since then the intercalary day is removed neither too rarely nor too frequently, but a certain mean rule is always preserved. Indeed, this method of intercalation corrects and amends itself: for when at one period the intercalary day is omitted more often than is fair, this error is compensated at another period, when the intercalary day is removed more rarely, and conversely.

[Margin: Why the mean year — that is, the Alphonsine — is alone suited to equalizing the solar year.]

[Margin: How the rule of intercalation established on the mean year amends itself.]

This will be plain from the calculations of a number of years at the end of chapter 6, where it will appear clearer than daylight that an even equation can be established only on the middling year, and not on the least or the greatest: seeing that

seeing that the equations of those years drive the equinox, after a certain number of years, very far from its own seat and station, whereas the equation of that other year — the mean year, that is — keeps it near 21 March, which is its proper seat, so that it cannot stray far from it even over many thousands of years.

Nor can any other drawback (if it can even be called a drawback) follow from this omission of the intercalation established on the mean length of the year, except this: in a maximum year we take away the intercalary day sooner than is needed, and so the equinox retreats a little from 21 March toward the end of the month, and the ecclesiastical equinox, fixed to the 21st, comes before the true one; whereas in a minimum year we omit the intercalary day later than is fair, and so the equinox leaves 21 March and moves toward the beginning of the month, so that the ecclesiastical equinox falls after the celestial, or true, one. That this is not absurd, but on the contrary thoroughly in keeping with the Church's practice, will be understood from what follows.

[Margin: No drawback of any consequence follows from the intercalation established on the mean year.]

11 Next, this second method is the more approved because — as we proved in the preceding chapter with several arguments — the Church has always used mean motions, or rather cycles, in investigating the new moons and the fourteenth days of the Moon for the correct celebration of Easter, leaving true motions to the more exacting researches of the astronomers. Mean motions are always equal and uniform; true motions are unequal and irregular, now greater than the mean, now less. It seems fair, then, and consistent that for keeping the equinox in its seat the Church should likewise use the length of year that lies midway between the greatest and the least, since the case appears the same on both sides. For just as the mean conjunctions of the luminaries sometimes come before the true ones and sometimes after them, so too the equinox yielded by a year midway between the greatest and the least will at one time come before the true equinox, which then follows [?], while at another time it will fall after the true one, as we said a little earlier.

[Margin: 2. Reason. Why the length of the mean year was adopted in the correction of the calendar.] [Margin: The likeness between the mean conjunctions of the luminaries and the equation established on the mean year.]

But suppose someone objects as follows. Since the true equinox does not always fall on 21 March, where the Church has placed it, but sometimes before it and sometimes after, it necessarily follows that some fourteenth days of the Moon which belong to the first month and are Paschal by the decrees and enactments of the Fathers and of the Council of Nicaea are nevertheless rejected as non-Paschal and treated as belonging to the last month — and this because those fourteenth days occur before 21 March, the day on which the Church supposes the equinox to fall, even though they may land on the very day of the equinox (which then

perhaps precedes the 21st), or even follow it. And conversely, some fourteenth days of the Moon which by those same decrees and enactments of the Fathers and of the Nicene Council are not Paschal and belong to the last month are nevertheless reckoned by the Church as legitimate for celebrating Easter and as of the first month, because they fall on 21 March, the day set aside for the equinox, or follow it, even though they come before the vernal equinox, which then perhaps occurs after the 21st. Both results seem absurd, since the former fourteenth days of the Moon push Easter out of the first month into the second, while the latter set it to be celebrated in the twelfth and last month, before the first.

[Margin: The difficulty that Easter is sometimes pushed into the second month, and sometimes anticipates the first month, if the equation is established on the mean year.]

If anyone, I say, raises this objection, the answer is that this is neither absurd nor new in the Church of God. For the equinox cannot be confined within one day; it demands two. Suppose that in some leap year it falls, say, on 20 March about midday: in the following year it will fall six hours later, namely on the 20th about sunset, on account of those six hours that are dropped in every year after the leap year. Then in the next year it will fall on the 21st about midnight, and in the year following that on the 21st about sunrise; and finally in the next year, which is again a leap year, it will go back to the earlier day, the 20th, about midday, because of the intercalary day added to that year. Since, therefore, the equinox requires two days, while the Church has always assigned it a single day, namely 21 March, so that all the faithful of Christ may everywhere celebrate Easter on the same day — that is, on the Sunday next after the fourteenth day of the Moon which falls either on the day given to the equinox, 21 March, or immediately after it, but never before, as we showed above — it was impossible at any period, even in the days of the Council of Nicaea itself, when the Paschal canon was first confirmed and issued by a general council, to prevent Easter from sometimes being celebrated in the last month or in the second. I shall make this plain as follows.

[Margin: The solution of the difficulty: it is nothing new that Easter should sometimes be celebrated either in the second month or in the last, on account of common and leap years.]

Suppose, then, that around the time of the Council of Nicaea the equinox — which the Fathers fixed on 21 March — actually fell on 21 and 22 March, as the tables of Nicolaus Copernicus, that is, the Prutenic Tables, show us. From them we find

that in the leap year AD 324 the equinox fell on 21 March about midday, and therefore in the third year after the leap year, namely 327, on the 22nd about sunrise. On this supposition, whenever in that third year after the leap year the fourteenth day of the Moon fell on 21 March (which, while golden number 16 was running, always happened before the correction of the calendar), Easter was celebrated in the last month, since that fourteenth day of the Moon had preceded the equinox; and Easter would have fallen on the equinox itself, if the 22nd happened then to be a Sunday. Next let us suppose that around the same time of the Nicene Council the equinox occupied 20 and 21 March, which agrees better with the Alphonsine Tables, since they place the equinox in the leap year 324 on 20 March at about 22 hours before midday [?]. If we accept this, I say, then whenever at that period the fourteenth day of the Moon in a leap year fell on 20 March, Easter was pushed into the second month, although that fourteenth day of the Moon was truly Paschal, seeing that it fell either on the equinox or after it; and yet the Church rejected it as belonging to the last month, for no other reason than that it came before the 21st, the day assigned to the equinox. The same must now necessarily happen after the correction as well, whenever epacts xxiv and xxiii are in use. For when the equinox falls on 20 March and epact xxiii is running, the fourteenth day of the Moon of that epact, seated on 20 March, would be Paschal by the decrees of the Fathers and of the Nicene Council; and yet it is rejected, and another, belonging to the second month, is accepted instead. And when the equinox falls on 22 March and epact xxii is running, the fourteenth day of the Moon of that epact, falling on the 21st, is [?] taken as Paschal, although by the decrees of the Fathers it belongs to the last month, since it stands before the equinox.

[Margin: Easter had necessarily to be celebrated sometimes in the second month and sometimes in the last, even in the days of the Council of Nicaea itself.]

[Margin: The Church does not conflict with the decrees of the Fathers, even though it sometimes celebrates Easter either in the last month or in the second, since this can in no way be avoided.]

12 From all this it plainly appears that it is nothing new in the Church for Easter to be celebrated either in the last month or in the second, because the equinox is tied to a single day when it requires two. Nor is the Church to be thought to depart in this from the decrees of the Fathers and of the Council of Nicaea. Those decrees are not to be taken so strictly as to mean that the Church must determine the equinox from astronomical tables; they are to be understood only as directing that in the celebration of Easter the Church must observe the day ascribed to the equinox,

even if the equinox sometimes comes before that day or after it, provided it does not recede far from it.

13 It can therefore rightly be said that the equinox is taken in two senses: in one, as it truly exists in the nature of things and is considered by astronomers; in the other, as it is fixed in the calendar to some determinate day and used by the Church for the due celebration of Easter. Let the first be called the astronomical or true equinox, the second the ecclesiastical or civil [politicum] equinox. And although this ecclesiastical equinox ought to be referred, so far as possible, to the astronomical and true one, there are nevertheless just causes for which the one may differ from the other. The most just cause of all, why the ecclesiastical equinox sometimes differs from the natural and true one, is the concord and consent of the faithful. For the sake of that concord the Church ascribed the equinox to one single day, so that throughout the whole Christian world all might keep the most holy day of Easter on the same day and with united hearts. That concord could scarcely — or rather not even scarcely — be preserved if the equinox, reckoned by the true motion, were tied to two or even more days, as is clear from what we have said. And so, although in the celebration of Easter the Church freely and of its own accord sets itself to observe the equinox and the course of the Moon (for it is bound by no law to do so, as we said above in chapter 1), and does so in order to bring out more fully the mysteries contained in the most holy Passion and in the Lord's Resurrection, still the peace and concord of the faithful is dearer to its heart. So much so that if in some case a loss must be incurred either in the equinox and the motion of the Moon or in the concord of the faithful, the Church would rather that Easter be celebrated by all on the same day, even if the equinox and the course of the Moon are not perfectly kept, than that the least agreement of the faithful in celebrating it be broken or disturbed. For who could justly blame the Church, or charge it with error, if it departs somewhat from the perfect observance of the equinox and of the fourteenth day of the Moon in order to preserve quiet and peace among the faithful in keeping Easter, the most celebrated of all the feasts of the faithful? The equinox and the fourteenth day of the Moon it considers in this business freely, and only for the sake of a certain congruity and likeness with the Passover of the Hebrews, as we showed in chapter 1; but the peace and concord of believers it is bound by divine command to protect and preserve.

[Margin: The equinox is twofold: astronomical, that is, true, and ecclesiastical, that is, civil.] [Margin: Why the ecclesiastical equinox differs from the astronomical one.] [Margin: That the Church observes the equinox and the fourteenth day of the Moon freely in the solemnity of Easter, and why it observes

them.] [Margin: That the peace of the faithful in the celebration of Easter is dearer to the Church than the exact observance of the equinox and of the course of the Moon.]

14 Finally, the Church followed the mean year in this matter above all for the following reason. Suppose that, because of the omission of the intercalary day established on the mean length of the year, it should happen after the lapse of some centuries that the equinox no longer stood on 21 March, but was found by new observations to have slipped toward the end of the month or moved forward toward its beginning. We do not deny that this can happen, given the uncertainty and changeableness of the astronomical tables. (Just as the tables of Ptolemy and of King Alfonso have by now been found to have deviated somewhat from the true motions — although in the times when they were composed they presented those motions most exactly — so we cannot guarantee the perpetuity of the Prutenic Tables drawn from the teaching of Copernicus.) Even if, I say, the equinox were found to have moved from its seat, it could be brought back to the 21st without any trouble: by decree of the Roman Pontiff one day, or two, or even more if need be, could be intercalated out of the ordinary course in some year, if the equinox were found to have slipped toward the end of the month; or one or more days could be taken away from some year, if it had moved toward the beginning of the month — according, of course, to the number of days by which the equinox was observed to have receded from the 21st. By this means it would be restored to the 21st day, and nothing on that account would have to be changed in the epacts of the calendar; only the equations of the expanded table of epacts would have to be arranged a little differently. How that should be done we shall explain in its own place, when we come to speak of the equation of the epacts.

[Margin: 3. Reason. Why the mean length of the year was adopted in the correction of the calendar.] [Margin: The equinox, if after some centuries it should have departed [?] from 21 March, by what means it can be recalled to that same day.]

15 And in this consists the excellence and perpetuity of the Gregorian calendar: that it can be fitted to any form of intercalation whatever — that is, to any length of the year — without any change being made in the cycle of the epacts in the calendar. This is something that can suit no other lunar cycle, since when the rule of intercalation is changed the arrangement of the cycle in the calendar must necessarily be changed too, as we shall explain at length below when we treat of the expanded table of the epacts. Not understanding this, most people rashly and

thoughtlessly attack the perpetuity of the Gregorian calendar. For the Gregorian calendar is not called perpetual, and subject to no change ever, in the sense our adversaries falsely put upon it — as though a formula of intercalation were prescribed in it by which the equinox would be so held on 21 March that it never moved from that day. We never said this; and indeed it cannot be brought about by any means, if the civil year is to consist of whole days and the manner of intercalation is to be easy and regular, as it should be, and if what is set before an untrained people is not to be the astronomical year made up of days, hours, and fractions of hours, with an irregular form of intercalation. For who could be so stupid and dull — provided he has even the slightest tincture of astronomy — as to persuade himself of such a thing, when daily experience teaches us that the equinox cannot stand on the same day even over an interval of four years, because of the six hours dropped each year? We called this new calendar perpetual and subject to no change for this reason instead: that even if posterity should perhaps discover a different length of the year, and a different rule of intercalation should accordingly have to be established to match it (which we frankly admit may happen, given that the length of the year is uncertain and unequal — this indeed was why two formulae of intercalation were laid before the Christian princes and the mathematicians in the *Compendium* of the restoration of the calendar), the calendar itself, so far as concerns the arrangement of the epacts, will remain wholly untouched. This would not be the case if the golden number had been left in the calendar, arranged over the days in whatever manner, as some wished. For not only would a different intercalation have to be established for different lengths of the year, but even keeping always the same form of intercalation, according to the Alphonsine year which we have proposed, the golden number would have had to be altered in the calendar thirty times; and therefore thirty different calendars would have had to be composed — which would be intolerable — because of the anticipation of the Moon, as will be clear below in chapter 15.

[Margin: The perpetuity and perfection of the Gregorian calendar: in what it consists.] [Margin: That the new calendar is not called perpetual as though the equinox could never recede from 21 March.] [Margin: That it is impossible for the equinox to remain on the same day, because of the six hours dropped each year.] [Margin: Why the new calendar is called perpetual.]

16 And so, since in this business of correction the length of the Alphonsine year has been chosen — the year according to which the form of intercalation for keeping the equinox on the same day is to be established, as being more uniform and better suited to the common understanding — let us now explain how the

omission of the intercalary day in every hundredth year after the year 1600, every four hundredth excepted (of which something was said at the beginning of this chapter), squares with this length of the year. For since, as we showed in chapter 1, the equinox anticipates by nearly one whole day in 134 years, so that if it now clings to the 21st it will after 134 years have moved forward to the 20th, it follows

that if in any given 134th year after the year 1600 the intercalary day is omitted — making now the 132nd, now the 136th year (since the 134th is not a leap year) a common year, of 365 days, and not a leap year as it ought to be if the Julian, or greater ecclesiastical, year were neither longer nor shorter than 365 days and 6 hours — it follows, I say, that the equinox returns to the 21st, just as by the omission of ten days made in the year 1582 it was restored to that same 21st, from which it had drifted toward the beginning of March. But since this variation, by which the intercalation would have to be omitted now in any 132nd year, now in any 136th, could easily be forgotten — such years being marked by no conspicuous sign — the hundredth years were chosen instead for this purpose, since they are more prominent, and negligence or forgetfulness cannot so easily creep in with them; especially since all the hundredth years are dedicated to jubilees, and are therefore best known to the sons of the Catholic Church, and most eagerly awaited. For since in 134 years, as has been said, the equinox anticipates by one day, it will in the space of 402 years get ahead of its seat in the calendar by three days.

[Margin: Why the hundredth years were chosen for equalizing the solar year.]

[Margin: By what reasoning the omission of the intercalary day in the hundredth years, every four hundredth excepted, squares with the Alphonsine year.]

17 Therefore, if in each space of four hundred years three intercalations are omitted, in this order — that the first three hundredth years after the year 1600 (for the year 1600 does not yet need an equation, since at that point, because of the nearness of the year 1582 in which the calendar was corrected, the equinox could not yet anticipate a whole day, but still falls on the 21st [?]) be common years and not leap years, while every four hundredth year is a leap year — then the equinox will be kept near 21 March exactly as if the intercalary day were omitted in every 134th year.

And so, although in future every fourth year (with three left between) is still to be a leap year as usual, yet these years 1700, 1800, 1900 will not be counted as leap years (although they are contained in the number of the leap years) but as common years, while the year 2000 will be a leap year. In the same way the years

2100, 2200, 2300 will be made common, and the year 2400 a leap year, and so on continually, the same order being kept, until it is found that the equinox has so far departed from 21 March that it cannot return to it unless an intercalation is made out of the ordinary course by decree of the Supreme Pontiff, or one or more days are omitted in some year, as we showed above. Nor should anyone be surprised that we have neglected those two years which remain over and above the 400: for in many thousands of years — namely in 26800 — they can scarcely produce an error of one day, even if no account is taken of them; and that error, when it has grown to one day, will easily be corrected by an extraordinary intercalation of one day in some common year, since the day then to be restored to the year is one that was removed without necessity. We judged, however, that no account should be taken of those two years, lest the rule of intercalation be made more obscure — especially since posterity, after the year of the Lord 28400, that is, about the year 26800 after the correction (if the world lasts so long), will easily restore the equinox to its seat, as we have said. Add to this that our rule of intercalation is established on the Alphonsine year, of which we cannot be certain whether over so long a time it will always keep the middle place between the greatest and the least year. We therefore rightly leave this care to posterity, that they may consider in good time what equation is then to be established, if by chance a different length of the year has been discovered. This number of 26800 years is arrived at as follows. If in 134 years one intercalary day is omitted, then in 2 years there ought to be omitted $\frac{2}{134}$ [?] — that is, $\frac{1}{67}$ — of a day; and it is by this small amount that we anticipate the omission of the intercalation in 400 years. Therefore, if $\frac{1}{67}$ of a day demands 400 years, one whole day will require 26800 years. And this is true, of course, provided the year really is 365 days, 5 hours, 49 minutes, 16 seconds. But on this matter see also what we wrote in chapter 14, number 1.

18 Further, it seems worth noting that this rule of intercalation established in the hundredth years is very like the customary formula of intercalating in every fourth year, and so can easily be kept in memory by ordinary people. For just as every fourth year after the birth of Christ has always been and will be a leap year (with certain hundredth years excepted), while all the rest are common years, so after the year 1600 every four hundredth year will be a leap year, and all the other hundredth years common. Again, just as among the non-hundredth years those alone are leap years which the number four measures — such as the years 4, 8, 12, 16, 20, 24, 28, 32, 1588, 1592, 1596, 3416, 3420, 3424, and so on — so too after the correction, of the hundredth years those alone will be leap years whose number of hundreds the number four measures: such as the years 1600, 2000,

2400, 3600, 9200, and so on. For the number four measures all these numbers of hundreds — 16, 20, 24, 36, 92 — as is evident.

[Margin: The likeness between the intercalation in every four hundredth year and the customary intercalation in every fourth year.]

But someone will say (and in fact not a few are persuaded of this): this omission of the intercalary day in the hundredth years is indeed excellently suited to the grasp of ordinary people and to memory, but it seems less fit for keeping the equinox on 21 March. For since, to keep the equinox on the same day, one intercalary day must be omitted every 134 years, according to the length of the Alphonsine year, as was shown above, the result is that in an equation which proceeds by hundredth years, the omission of the intercalary day forestalls the just and lawful equation by 34 years in the first century, by 68 years in the second, and by 102 years in the third. And this seems not to keep the equinox in its seat, but rather to drive it out of it.

[Margin: The difficulty that the equation seems not rightly applied in the hundredth years, since it ought to be made in every 134th year.]

Yet if anyone will consider the matter a little more attentively, he will certainly understand that by this equation of ours — supposing the length of the year to be exactly what the Alphonsine Tables give us — the equinox is more correctly kept in its seat than if the equation were made in every 134th year. This will be made plain as follows. Let us suppose that in some year the equinox falls on 21 March six hours before sunrise, that is, at the midnight preceding. On this supposition, after 33 1/2 years it will run ahead of that midnight by six hours, and will fall about sunset of the 20th, since in 134 years it anticipates by one day, and therefore in 33 1/2 years by a quarter of a day, that is, by six hours. After 67 years, for the same reason, it will be found at midday of the same 20th day; and after 100 1/2 [?] years, at sunrise of that same 20th. So that after the space of 100 years the equinox will have receded from the 21st, its assigned seat, toward the beginning of the month by three quarters of a day, that is, by 18 hours. But if in that hundredth year the intercalary day is not removed, and instead the 134th year is waited for — as pleases some who do not weigh the matter rightly — this recession toward the beginning of the month will grow to 24 hours, and the equinox will fall before the 20th day, at midnight,

[Margin: The solution of the foregoing difficulty.]

will fall before the 20th day, at midnight, before the day is removed in the 134th year; and this will happen in every interval of 134 years. But if the intercalary

day is subtracted in the first centesimal year — even though the anticipation of the equinox has not yet grown to a full day but only to 18 hours — the equinox will be carried back from sunrise of the 20th to sunrise of the 21st. It will then stand six hours toward the end of the month from the point first assigned to it, and not 18 hours toward the beginning of the month. Next, in the second centesimal year, once the equinox has reached midday of the 20th, the subtraction of the intercalary day will restore it to midday of the 21st, and it will stand 12 hours from its first seat. In the third centesimal year, when the equinox has already reached sunset of the 20th, the removal of a second day will bring it back to sunset of the 21st, and it will stand 18 hours from its first seat. From then on this distance will gradually shrink, until in the fourth centesimal year it has diminished by 18 hours — since in each centesimal year the equinox runs ahead of its seat by 18 hours — and so the equinox will once again be in its first seat, that is, at midnight before the 21st, because in that fourth centesimal year the intercalary day is not omitted but intercalated in the usual way.

YOU SEE, then, that if one day were taken out every 134th year — which, as we said, not a few have thought expedient — the equinox would always recede toward the beginning of the month from the seat assigned to it, so that this recession would grow to nearly a whole day at about the 134th year; and this would happen three times in the space of four hundred years. But under our equation, established at the centesimal years, the distance of the equinox from its first seat can never amount to 24 hours, but at most to 18 — and that only once in the whole space of four hundred years. Therefore the equinox is kept at the 21st day more accurately if the equation is made at the centesimal years than if the 134th year is waited for.

[Margin: The equation applied at the centesimal years preserves the equinox on the same day in the same way that it is preserved by intercalation every fourth year.]

19. ADD to this that our equation, applied at the centesimal years, not only conforms to the customary four-yearly rule of intercalation, as was said above, but that the reasoning in the two cases is exactly the same as regards keeping the equinox in the same seat. For just as in the first year after a bissextile the equinox slips six hours toward the end of the month, in the second 12 hours, and in the third 18 hours — because of the six hours dropped in each common year — and then in the fourth year, thanks to the intercalation of one day near the beginning of the year, it is restored to the same seat without waiting for the full 24 hours to elapse: exactly so it

happens in any space of four hundred years, if the first three centesimals are made common and the fourth intercalary, as is plain from what has been said. Therefore this arrangement cannot rightly be faulted without condemning the other along with it.

[Margin: The equation applied at the centesimal years is very like the Arabs' equation in the lunar year.]

20. AND consider, too, that the Arabs follow much the same rule of intercalation in the equation of the lunar year. They never wait until a whole day is made up out of the hours dropped; rather, whenever a number of those hours greater than 12 has accumulated, they establish an intercalary year, adding one day to the lunar year of 354 days — a year they call *embolismic* [embolismus]. On this subject one should read Campanus in the *Computus maior*, and Paul of Middelburg [Paulus Middelburgensis], book 2 of his *Paulina*. But so that it may be seen still more plainly that no more convenient or more truthful way of making the equation could have been taken than the one we have set out in this chapter, we shall bring forward the arguments — or rather the quibbles — that certain people raise against this method of equating the solar year. First, though, the next chapter must set out somewhat more carefully the whole period of the anomaly of the equinoxes and of the inequality of the years, according to the hypotheses of Nicolaus Copernicus, since these are the ones more widely accepted by astronomers today. From that it will appear with the greatest clarity both that the prescribed formula of equation is entirely apt, and that our opponents, whoever they may be, are wasting their time in attacking it.

CAPVT VI.

De periodo anomalie Aequinoctiorum, & inæqualitatis annorum, ex Nicolai Copernici doctrina.

[On the period of the anomaly of the equinoxes and of the inequality of the years, from the doctrine of Nicolaus Copernicus.]

SINCE, with a view to overturning root and branch the formula for equating the solar year expounded in the last chapter, certain men who advertise themselves as distinguished astronomers rashly assert that, if that formula is used, the vernal equinox will slip from 21 March all the way to the 27th within no very great number of thousands of years and will never return to the 21st again; and since

they add that the mean equinox at present falls on 23 March, and that the true equinox can depart from the mean by a full four days, now advancing, now falling back — I think it worth my while, in order to expose the ignorance of these prophets, and in keeping with the plan of this work, to set out briefly in this chapter both the true and the mean equinoxes for the whole period of the anomaly of the equinoxes, together with the inequality of the solar years, out of the Prutenic Tables, which by now are almost the only ones anyone values, and out of which our opponents fabricate and draw all their arguments. In this way their slanders — which they employ to attack the equation of the equinoxes prescribed in the new calendar — will be made plain to everyone; and it will be made clear that the vernal equinox, with our formula of intercalation applied, will not recede from the 21st day by anything like the interval that these men falsely and rashly prophesy it will depart.

2. AND since Nicolaus Copernicus, on whose doctrine the Prutenic Tables were constructed, laid down that the period of the anomaly of the precession of the equinoxes is completed in the space of 1717 Egyptian years — which make 1717 [?] Julian years, the years we now use, and 302 days — we shall divide this whole circuit and revolution into 8 principal parts: first into 4 quadrants, and then each quadrant into two equal parts, so that the time of any one of these 8 equal parts comprises 214 years, 174 days, and 15 hours.

[Margin: When the period of the anomaly of the equinoxes would have begun before the birth of Christ. The root [radix] of the period of the anomaly of the equinoxes.]

3. THIS revolution of the anomaly had its beginning 63 completed years, 227 days, 20 hours and 42 minutes before the birth of Christ, because in that interval of time the equal or mean motion of that anomaly completes the arc assigned by Copernicus for the epoch, that is, for its root, at the beginning of the years of the Lord — which root contains Sign 0, Degrees 6, Minutes 40, Seconds 27, Thirds 28, Fourths 6. If, therefore, to the 63 years, 227 days, 20 hours and 42 minutes elapsed before the birth of Christ we add the 1715 years and 302 days of the whole circuit and revolution — or, what comes to the same thing, if we subtract that time before the birth of Christ from this entire revolution (much as if someone wished to add 10 days to a point three days before the beginning of the year, and so made up 7 days of the year, subtracting 3 from 10) — we shall find that the same anomaly begins its revolution afresh in the course of the year of the Lord

1653, on 25 March by the new calendar, whereas the beginning of the previous revolution had fallen on 18 May, had the Julian year then been in use.

[Margin: In what year of Christ the period of the anomaly of the equinoxes will begin again.]

Hence, by continually adding 1715 years and 302 days, one obtains the years in which the same revolution returns to its head. And by continually adding 214 years, 174 days and 15 hours, one obtains the years in which the same revolution occupies those eight equal parts of the whole period — as has been done in the table below, in which two whole revolutions are set out. The first has its beginning from the year 63 completed before the Nativity of Christ, and ends in the course of the year of the Lord 1653; from that year the second period begins and ends in the course of the year of the Lord 3369. In these we have also entered the days of the months in which the anomaly occupies roughly each of the eight parts of the whole revolution.

*Quando Anomalia
æquinocetiorum in
qualibet octo partium
existat.*[Where the

anomaly of the
equinoxes stands in each
of the eight parts.]

Anni Domini.labentes.

[Years of the Lord, in
course.]

Dies mensium.[Days of
the months.]

In principio reuolutionis,
seu primi quadrantis. [At
the beginning of the
revolution, or of the first
quadrant.]

63. ante Christum natum
expleto, & 1653.

18. Maii.25. Martii.

In medio primi
quadrantis [At the
middle of the first
quadrant]

151. &1867

8. Nouemb.18. Septemb.

In fine primi quadrantis,
& principio secundi. [At
the end of the first
quadrant and the
beginning of the second.]

366. &2082

2. Maii.12. Martii.

*Quando Anomalia
æquinociorum in
qualibet octo partium
existat.*[Where the

anomaly of the equinoxes stands in each of the eight parts.]	<i>Anni Domini.labentes.</i> [Years of the Lord, in course.]	<i>Dies mensium.</i> [Days of the months.]
In medio secundi quadrantis. [At the middle of the second quadrant.]	580. &2296	23. Octob.5. Septemb.
In fine secundi quadrantis, & principio tertij. [At the end of the second quadrant and the beginning of the third.]	795. &2511	16. Aprilis.28. Febr.
In medio tertii quadrantis. [At the middle of the third quadrant.]	1009. &2725	8. Octobr.24. Augusti.
In fine tertii quadrantis, & principio quarti. [At the end of the third quadrant and the beginning of the fourth.]	1224. &2940	31. Martii.15. Febr.
In medio quarti quadrantis. [At the middle of the fourth quadrant.]	1438. &3154	22. Septemb.11. Augusti.
In fine quarti quadrantis, seu totius reuolutionis, & principio nouæ reuolutionis. [At the end of the fourth quadrant, that is, of the whole revolution, and at the beginning of a new revolution.]	1653. &3369	25. Martii.2. Febr.

[Margin: When the true and the mean equinox occur together, when they differ most from each other, and when their difference is middling.]

4. THE true and the mean equinox do not differ from one another but occur simultaneously at the same moment when the anomaly is both at the beginning of its revolution and at the end of the second quadrant — that is, at the beginning of the first quadrant and of the third — because then the equation of the precession is nil. The greatest difference between the two equinoxes occurs when the anomaly holds the end of both the first and the third quadrant in its revolution, because then the equation of the precession is at its maximum. Finally, the difference between the two equinoxes is middling at the middle of each quadrant, because then the equation of the precession stands at its mean value. So it comes about that in a whole period of the anomaly the two equinoxes occur together twice, twice differ from one another by the greatest amount, and four times have their difference settled at a middling value.

[Margin: When the tropical year is greatest, when least, and when middling.]

AGAIN, the tropical or turning year is greatest when the anomaly is both at the beginning of its revolution and at the end of it — that is, at the start of the first quadrant and at the end of the fourth. It is least when the same anomaly is set at the middle of its revolution, that is, at the end of the second quadrant or the beginning of the third. At all the other places of the anomaly it is middling. The reason for this variation is that the precession of the equinoxes for a single year — which must always be subtracted from the equal sidereal year (which contains 365 days, 6 hours, 9 minutes, 39 seconds, on the view of Thābit [Thebitius] and Copernicus) so that the magnitude of the tropical year is left — is slowest both at the beginning of its revolution and at the end, and swiftest at the middle; while at all the other places it stands midway between the slowest and the swiftest motion. And so in the whole period of the anomaly of the precession of the equinoxes the year is once greatest, once least, and more often middling — yet in such a way that the magnitudes of two years always equally distant on either side from the least year are equal to each other. All of this is contained in the following table, where

the time of the true and of the mean equinox, at the moments when the anomaly stands at those eight places of the whole revolution begun in the year 1653, has been computed, together with the magnitude of the turning year. The computation has been made for the bissextile years nearest to the years in which the anomaly stands at those eight places (except for the year 1653, which is the

beginning of the revolution and to which the calculation was carried back, although it is not a bissextile), because in bissextile years less variation is observed in the Sun's entry into the first degree of Aries. The calculation has also been adapted to the equation of the restored calendar, which proceeds by 400 years. We have, however, disregarded the hours in the equinoxes, since it seemed enough for the day of the vernal equinox to be recorded together with the time before or after midday or midnight, the hours being left out.

Anno 1653. quando reuolutio anomaliae præcessionis æquinociorum incipit. [In the year 1653, when the revolution of the anomaly of the precession of the equinoxes begins.]

Æquinocium [The equinox]	fiet [will fall]
verum [true]	20. Martij post med. noct. [20 March after midnight]
medium [mean]	20. Martii post med. noct. [20 March after midnight]

Annus tropicus continebit dies 365. hor. 5. min. 55. sec. 37. ter. 40. — The tropical year will contain 365 days, 5 hours, 55 minutes, 37 seconds, 40 thirds. This was also the magnitude of the year in the year 63 before the birth of Christ our Lord; and on that magnitude the equinox anticipates by one day in about 329 years.

Anno 1868. cum anomalia erit iuxta medium primi quadrantis suæ reuolutionis. [In the year 1868, when the anomaly will be near the middle of the first quadrant of its revolution.]

Æquinocium [The equinox]	fiet [will fall]
verum [true]	21. Martii post med. noct. [21 March after midnight]
medium [mean]	20. Martii circa ortum Solis. [20 March about sunrise]

Annus tropicus continebit dies 365. hor. 5. min. 53. sec. 52. — The tropical year will contain 365 days, 5 hours, 53 minutes, 52 seconds. This magnitude of the year also suits the time around the year of the Lord 151; and on it the equinox anticipates by one day in very nearly 231 years.

Anno 2080. obtinente anomalia finem ferme primi quadrantis, & principium secundi suæ reuolutionis. [In the year 2080, the anomaly holding roughly the end of the first quadrant and the beginning of the second of its revolution.]

Æquinoctium [The equinox]	fiet [will fall]
verum [true]	21. Martij circa occasum Solis. [21 March about sunset]
medium [mean]	20. Martii post mer. [20 March after midday]

Annus tropicus erit dierum 365. hor. 5. min. 49. sec. 16. ter. 29. — The tropical year will be of 365 days, 5 hours, 49 minutes, 16 seconds, 29 thirds. This magnitude of the year also fits the time around the year of the Lord 366; and on it the anticipation of the equinox by one day requires about 134 years.

Anno 2296. cum anomalia circa medium secundi quadrantis suæ reuolutionis versabitur. [In the year 2296, when the anomaly will be moving about the middle of the second quadrant of its revolution.]

Æquinoctium [The equinox]	fiet [will fall]
verum [true]	21. Martii post merid. [21 March after midday]
medium [mean]	20. Martii sub occasum Solis. [20 March toward sunset]

Annus tropicus erit dierum 365. hor. 5. min. 44. sec. 46. ter. 59. — The tropical year will be of 365 days, 5 hours, 44 minutes, 46 seconds, 59 thirds. This magnitude of the year also obtained around the year of the Lord 580; and on it the equinox anticipates by one day in about 94 years.

Anno 2512. quando anomalia erit iuxta finem secundi quadrantis, & in principio fere tertij, videlicet in medio totius reuolutionis. [In the year 2512, when the anomaly will be near the end of the second quadrant and almost at the beginning of the third — that is, at the middle of the whole revolution.]

Æquinoctium [The equinox]	fiet [will fall]
verum [true]	21. Martij ante merid. [21 March before midday]
medium [mean]	21. Martii ante merid. [21 March before midday]

Annus tropicus est dierum 365. hor. 5. min. 42. sec. 55. ter. 7. — The tropical year is of 365 days, 5 hours, 42 minutes, 55 seconds, 7 thirds. This magnitude of the

year also obtained around the year of the Lord 795; and on it about 84 years are required for the equinox to anticipate by one day.

Anno 2724. anomalia occupante medium ferme tertij quadrantis suæ reuolutionis. [In the year 2724, the anomaly occupying nearly the middle of the third quadrant of its revolution.]

Æquinoctium [The equinox]	fiet [will fall]
verum [true]	20. Martii post med. noct. [20 March after midnight]
medium [mean]	21. Martii circa occasum Solis. [21 March about sunset]

Annus tropicus erit dierum 365. hor. 5. min. 44. sec. 46. ter. 59. — The tropical year will be of 365 days, 5 hours, 44 minutes, 46 seconds, 59 thirds. This magnitude of the year also obtained around the year of the Lord 1009; and it requires nearly 94 years for the equinox to anticipate by one day.

Anno 2940. versante anomalia in fine prope tertij quadrantis suæ reuolutionis, & principio fere quarti. [In the year 2940, the anomaly standing near the end of the third quadrant of its revolution and almost at the beginning of the fourth.]

Æquinoctium [The equinox]	fiet [will fall]
verum [true]	19. Martii post med. noct. [19 March after midnight]
medium [mean]	21. Martij circa ortum Solis. [21 March about sunrise]

Annus tropicus erit dierum 365. hor. 5. min. 49. sec. 16. ter. 29. — The tropical year will be of 365 days, 5 hours, 49 minutes, 16 seconds, 29 thirds. This magnitude of the year fits the period around the year of the Lord 1224 as well, and it requires about 134 years for the equinox to anticipate by one day.

Anno 3156. cum anomalia erit fere in medio quarti quadrantis suæ reuolutionis. [In the year 3156, when the anomaly will be nearly at the middle of the fourth quadrant of its revolution.]

Æquinoctium [The equinox]	fiet [will fall]
verum [true]	20. Martii circa occasum Solis. [20 March about sunset]
medium [mean]	21. Martii circa merid. [21 March

Æquinoctium [The equinox]

fiet [will fall]

about midday]

Annus tropicus erit dierum 365 hor. 5. min. 53. sec. 52. — The tropical year will be of 365 days, 5 hours, 53 minutes, 52 seconds. This magnitude of the year also occurred around the time of the year of the Lord 1438; and on it nearly 231 years are required for the equinox to anticipate by one day.

Anno 3368. quando anomalia tenebit fere finem totius reuolutionis, hoc est, in fine quasi quarti quadrantis versabitur. [In the year 3368, when the anomaly will hold nearly the end of its whole revolution — that is, it will stand almost at the end of the fourth quadrant.]

Æquinoctium [The equinox]

fiet [will fall]

verum [true]

21. Martii circa merid. [21 March
about midday]

medium [mean]

21. Martii circa merid. [21 March
about midday]

Annus tropicus erit dierum 365. hor. 5. min. 55. sec. 37. ter. 40. — The tropical year will be of 365 days, 5 hours, 55 minutes, 37 seconds, 40 thirds. This magnitude of the year suits the period around the year of the Lord 1653, and also around the year 63 before the birth of Christ. It requires nearly 329 years for the equinox to anticipate by one day. And if the year always had this magnitude, the customary bissextile intercalation would have to be omitted every 329th year.

From all this one can easily gather how great a confusion would arise throughout the whole Christian world if the equation of the equinox had to be established according to the true motion. It would have to be changed very frequently within the space of 1715 years, in step with the varying magnitude of the year, which over that span grows and shrinks continuously in a remarkable way. This would throw all the churches into great anxiety, since they would be perpetually in doubt whether the intercalary day should be dropped in this bissextile year or in that, and would be forced to canvass the opinions of astronomers on the question every year. That would be wholly absurd, and unheard of down to the present day.

[Margin: Confusio inter Christianos, si æquatio æquinoctij ad motum verum institueretur. — Confusion among Christians, if the equation of the equinox were established with reference to the true motion.]

5 It is likewise clear that no equation of the solar year which prescribes that the intercalary day be dropped at fixed and always settled times — such as ours is, which lays down that in every four hundred years three intercalary days be removed — can square in every respect with the true motion of the Sun, so as to keep and preserve the equinox perpetually on 21 March. The reason is that according to the true motion, sometimes more years are required and sometimes fewer for the equinox to advance by one day in the calendar toward the beginning of the month. It is therefore pointless for some to attack this equation of ours on the ground that it does not answer exactly to the true motion, since this cannot possibly be achieved by any equation that is regular and uniform — the kind the Church ought to institute, and the kind ours is, as is evident from what has been said.

[Margin: *Æquationem vniformem frustra à nonnullis impugnari. — That a uniform equation is attacked by some to no purpose.*]

6 It is clear, further, that throughout the whole of the period next to come — which begins in the year 1653 and will end in the year 3369 — the vernal equinox will depart from its seat by not much more than the space of one day in either direction, even if the intercalation-equation of the new calendar is applied; provided that the magnitude of the Alphonsine year, which is in a way midway between the greatest and the least, has rightly been taken as the basis from which the formula of intercalation is prescribed. For that formula is both regular and uniform, and perfectly suited to ordinary people's grasp; and it holds the equinox around 21 March, where its seat has been fixed, in such a way that it cannot recede far from that day, but sometimes precedes it, sometimes follows it, and sometimes falls on the 21st itself.

[Margin: *Æquinocetium secundum æquationem noui Calendarij non longe à die 21. Martij recedere, ideoque merito eam esse institutam ad annum Alphonsinum, qui medius est. — That under the equation of the new calendar the equinox does not recede far from 21 March, and that the equation was therefore rightly framed on the Alphonsine year, which is the middle one.*]

7 Finally, it follows from what we have said that in one entire period of the anomaly of the equinoxes the difference between the true and the mean equinox never grows to two whole days — indeed, not even to a day and a half. Yet certain people slanderously assert that it can amount to a full four days; and in this they clash most plainly with the teaching of Copernicus, which they nevertheless make a great parade of. This too will be made plain as follows. The true and the mean equinox occur together at the same moment of time (as was said above at

Number 4) whenever the equation of precession is nil, which happens when the anomaly of precession holds the beginning, or the middle, or the end of its circuit and revolution. They stand furthest apart from each other when that same equation is greatest, and in the Prutenic Tables it then comes to 1 degree 11 minutes 22 seconds 30 thirds; this happens whenever the anomaly stands at the beginning of the second quadrant of its revolution, or of the fourth. Moreover, when these two equinoxes differ from each other, the mean goes first and the true follows — that is, the mean equinox occurs before the true — whenever the equation of the precession of the equinoxes is subtracted from the mean precession in order to obtain the true precession; and that happens whenever twice the anomaly is less than a semicircle, that is, when the anomaly of the equinoxes has not yet completed the second quadrant of the whole period. The mean equinox follows and the true goes first — that is, the true equinox occurs before the mean — whenever the equation of the precession of the equinoxes is added to the mean precession in order to make up the true precession; and that comes about whenever twice the anomaly is greater than a semicircle, that is, when the anomaly of the equinoxes has already passed the second quadrant of the whole period. The one equinox precedes or follows the other by just so much time as suffices for the Sun by its true motion to run through the arc of the equation of the precession of the equinoxes. Now since the greatest equation of the equinoxes never exceeds, as has been said, 1 degree 11 minutes 22 seconds 30 thirds, and since the daily motion of the Sun is at no time less than 0 degrees 56 minutes 46 seconds, it follows that the interval between the true and the mean equinox never exceeds 1 day and 6 hours, or a little more — even at the time when the Sun's motion is slowest and the equation of the equinoxes greatest. So I am utterly astonished at what can have come into the heads of certain people when they said, as if dreaming, that the difference between the two equinoxes can grow to a full four days, and that in this century the mean equinox falls on 23 March; whereas in fact, from the year of Christ our Lord 1653 to the year 3368 — one entire revolution of the anomaly — it scarcely ever passes beyond the 21st, as is evident from the calculation above.

[Margin: *Differentiam inter verum ac medium æquinoctium non attingere diem vnum cum semisse.* — That the difference between the true and the mean equinox does not reach one day and a half.]

[Margin: *Æquinoctium medium quando antecedit, aut sequatur verum.* — When the mean equinox precedes, and when it follows, the true.]

[Margin: Quantum sit maximum discrimen inter verum ac medium æquinoctium. — How great the maximum difference between the true and the mean equinox is.]

8. But I think I see the cause of these mathematicians' error. They have reasoned, I suppose, about the mean and the true equinox as we habitually do about the mean and the true conjunction or opposition of the luminaries. For they supposed that the equinox becomes mean only when the line of the Sun's mean motion is joined with the point of the mean equinox — just as the mean conjunction or opposition of the Sun and Moon occurs when the lines of the mean motions of the Sun and Moon are joined or opposed. From this it follows that, if the point of the mean equinox then lies between the point of the true equinox and the Sun's body, the true equinox will be distant from the mean by a greater interval than the prosthaphaeresis, or equation of the precession of the equinoxes, requires. Yet even so this distance could not reach a full four days, since the equation of the Sun, or of its orb, never amounts to two whole degrees.

[Margin: Quid deceperit nonnullos, vt putauerint æquinoctium medium à vero abesse posse toto quatrduo. — What deceived some, so that they thought the mean equinox could be four whole days distant from the true.]

But these lynx-eyed mathematicians have gone astray. For the case of the mean equinox is one thing, and that of the mean conjunction or opposition of the luminaries another. The mean equinox occurs as soon as the Sun reaches the point of the mean equinox, as astronomers teach. For Erasmus Reinhold [Erasmus Reinhold], that most skilled astronomer, writes as follows in Precept 22 of the Prutenic Tables which he constructed: *Non dubium est, Solem conficere vernum æquinoctium, cum tanto interuallo adhuc præcedit primam stellam Arietis, quantum interiectum est inter ipsam vernam sectionem vtriusque circulorum, æquinoctialis, atque obliqui, & eandem stellam.* [There is no doubt that the Sun makes the vernal equinox when it still precedes the first star of Aries by just such an interval as lies between that vernal intersection of the two circles, the equinoctial and the oblique, and the same star.] That this is to be understood of the mean vernal intersection as much as of the true is gathered from Precept 10, where he calls the difference between the mean and the apparent equinox the prosthaphaeresis, or equation of the equinoxes, whose maximum is 71 minutes and 22 seconds together with half a second. The same is taught much more clearly by Giuseppe Moletti [Giuseppe Moletti], the famous astronomer, in the

Gregorian tables he published, at Canon 13, where he says: *Fit æquinocmium apparens,*

[Margin: *Æquinocmium medium quando fiat.* — When the mean equinox occurs.]

apparens, quando Sol ingreditur punctum sectionis Eclipticæ, & Æquatoris apparentis: medium vero, quando Sol intrat punctum sectionis Æquatoris medij, & Eclipticæ. Et ideo æquinocmium verum fit, quando Sol antecedit primam Arietis stellam tanto spatio, quanta est vera præcessio æquinocmiorum ad datum tempus: Medium autem, quando Sol antecedit tanto interuallo primam Arietis stellam, quantus est arcus mediæ præcessionis. Differentia inter hæc duo æquinocmia est tempus respondens Prosthaphæresi æquinocmiorum. [The apparent equinox occurs when the Sun enters the point of intersection of the ecliptic and the apparent equator; the mean, when the Sun enters the point of intersection of the mean equator and the ecliptic. And so the true equinox occurs when the Sun precedes the first star of Aries by as great a space as the true precession of the equinoxes amounts to at the given time; the mean, when the Sun precedes the first star of Aries by as great an interval as the arc of the mean precession. The difference between these two equinoxes is the time answering to the prosthaphæresis of the equinoxes.]

The mean equinox will therefore not occur when the line of the Sun's mean motion occupies the point of the mean equinox, as these new mathematicians wrongly seem to want, but when the Sun itself holds that point, as we have set out from the doctrine of the astronomers. For if the equinox became mean when the Sun by its mean motion holds the mean vernal intersection, the true and the mean equinox would not always occur together when the prosthaphæresis of the equinoxes is nil — since it is very rarely the case that the Sun's true motion then fails to differ from the mean. But this conflicts with all the astronomers, since they all teach that the mean equinox occurs together with the true whenever the prosthaphæresis of the precession of the equinoxes is nil.

[Margin: *Æquinocmium medium non fieri, quando linea medij motus Solis cum puncto medij æquinocmij coniungitur.* — That the mean equinox does not occur when the line of the Sun's mean motion is joined with the point of the mean equinox.]

9 But let us carry the calculation forward to some later years, so that it may appear how rash and thoughtless one of these mathematicians has been in this matter too, when he most ineptly asserted that the equinox would slip back to 27 March before the year of the Lord 15000, if the method of equating the solar year

prescribed in the new calendar is kept. He asserted this, I believe, on no astronomical calculation, but out of that false opinion of his — namely, that the mean equinox falls on 23 March, and that either equinox can be distant from the mean by a full four days. For it is from this, and from nothing else, that one gathers that the true equinox will at some point slip back to 27 March, and will advance as far as the 19th. But that this is fictitious and false, the calculation of the years set out below plainly demonstrates.

[Margin: Quare quidam Astronomus putauerit æquinocmium verum prolapsurum ad diem 27. Martij. — Why a certain astronomer supposed that the true equinox would slip back to 27 March.]

Aequinocmium ergo verum fiet.

[The vernal equinox, then, will fall:]

Anno Domini [In the year of the Lord]	Die [on day]	Martii [of March]
4709	21	post med. noct. [after midnight]
5084	21	ante med. noct. [before midnight]
5209	23	circa med. noct. [about midnight]
6004	23	sub occasum Solis. [toward sunset]
10020	23	post med. noct. [after midnight]
15002	21	post med. noct. [after midnight]
15004	20	circa med. noct. [about midnight]
15102	21	post med. noct. [after midnight]
15202	21	post med. noct. [after midnight]
15604	22	post med. noct. [after midnight]

Anno Domini [In the year of the Lord]	Die [on day]	Martii [of March]
15804	23	circa med. noct. [about midnight]
20004	20	post merid. [after midday]
20005	20	post med. noct. [after midnight]

Where, I ask, is the equinox on 27 March in these thirteen years, right up to the year 20005? I certainly find that it is not more than two or three days, and a little more, away from the 21st — even when the true equinox is computed from the Prutenic Tables with the equation-formula of the Gregorian calendar always applied. But evidently that sharp mathematician, a simple soul born to slander what has been rightly done, supposed that no one would go on counting into future centuries to sift his prophecy about the equinox slipping back to the 27th.

And if, after so vast an interval of years (supposing the world is to last so long), it were established that the Prutenic Tables still agreed with the motions of the heavens, who does not see that our method of intercalation — framed on the mean magnitude of the year and running in periods of 400 years — is the most suitable of all, granted that something regular and uniform must be set before ordinary people in the ecclesiastical computus for determining the movable feasts from the motions of the heavens (which we have amply shown to be altogether necessary in chapter 4 and in other places)? For with this formula of intercalation applied, the equinox returns of its own accord to 21 March, even though, on account of the unequal magnitude of the solar year, or on account of the unequal precession of the equinoxes, it is apt now and then to stray a little to one side or the other of the 21st. And so with the fullest right this equation of ours can be said to keep the equinox around 21 March.

[Margin: *Calendarium nouum esse perfectum, etiamsi tabulæ Prutenicæ veris motibus adhuc consentirent post annos 20000. — That the new calendar is sound, even if the Prutenic Tables should still agree with the true motions after 20,000 years.*]

10. One point, however, must not be passed over here. If our equation, framed on the Alphonsine or mean year, is applied, the equinox follows 21 March more often than it anticipates it, and recedes from that same 21st by a greater interval toward the end of the month than toward its beginning.

For since, as has been said, the least year requires 84 years for the equinox to anticipate by one day, while the Alphonsine or mean year calls for 134 years and the greatest for 329, it comes about that the speed with which we forestall the equation due to the greatest year is greater than the slowness with which we defer the equation answering to the least year. Hence when the year is nearly at its greatest, the equinox will indeed roll forward to the later days of the month, because more intercalary days are dropped by our equation of the mean year than the case demands; and when the year is nearly at its least, the equinox will retreat to the earlier days of the month — yet not with the same swiftness with which it slipped toward the end of the month, because the number of intercalary days retained by our equation of the Alphonsine year, which on account of the least year ought to have been omitted, is not as great as the number previously omitted which the greatest year prescribed should be retained. But this matter ought not to be reckoned of such moment that another equation should on that account be established

[Margin: Cur æquinoctium per æquationem noui Calendarij frequentius post diem 21. Martij contingat in cœlo, quam ante diem 21. — Why, under the equation of the new calendar, the equinox occurs in the heavens more often after 21 March than before the 21st.]

and maintained — since no other can be devised so easy that it would keep the equinox in the same seat as well as ours does, especially since under our equation the equinox returns of its own accord to the 21st day, and is held there more correctly than under any other equation whatsoever.

To make this plain, and to show still more clearly that the Alphonsine year — the mean year — necessarily had to be adopted if a fixed and determinate equation was to be prescribed, and not the least or the greatest year (as we set out in chapter 5), we have computed the equinox of, for example, the year 5084, applying the equation first at intervals of 84 years (the span the least year requires for the equinox to anticipate by one day), and then at intervals of 329 years (the span we said the greatest year demands for the equinox to anticipate one day). If the first equation is used, then in the year 5084 a total of 51 days will have been dropped (counting in the ten that were removed in the year of the correction), and the equinox will fall on about 7 April — that is, 17 days after 21 March. If the second equation is applied, only 21 days in all will have been dropped, and the equinox will fall on about 7 March, roughly 14 days before 21 March. But with our own equation applied, 36 days will have been omitted by

that year, and the equinox will occur on 21 March, shortly before midnight, as is clear from the calculation of the preceding 13 years just given.

You see, then, that under the equation of the least year the equinox recedes from 21 March toward the later months by far too great an interval, while under the equation of the greatest year it slips back much too far from that same 21st toward the beginning of the month; whereas the equation of the mean year keeps and guards it quite suitably about that same 21st day.

In the same way the calculation will show that an equation framed to any other year than the mean drives the equinox from the proper seat we fixed for it on 21 March further than it should. This is evident from the year-length of 365 days 5 hours 53 minutes 2 seconds 37 thirds, which requires nearly 207 years for an anticipation of one day, and which might therefore seem apt for having an equation prescribed to it, since 207 years holds almost the middle place between the 84 and the 329 years which, as we said, the least and the greatest year require for the equinox to anticipate one day in the calendar. Let us see, then, whether this equation preserves the equinox at the 21st as well as ours does. The calculation shows that in the year 2940, for instance — when 18 days in all will have been dropped by this equation — the equinox falls on 18 March at sunrise, that is, 3 days and more before 21 March; while in the year 10020, with the same equation applied, 51 days in all will have been dropped, and the equinox occurs on 1 March, again at sunrise, that is, 20 days and more before 21 March. Now let us compare these equinoxes with the equinoxes of the same years under our own equation. We shall find that ours does not force the equinox so far from its proper seat — even though the 134 years in which, on our reckoning, the equinox anticipates one day do not hold the middle place between the 84 and 329 years that the least and the greatest year demand for an anticipation of one day: for in the year 2940 it puts the equinox on 19 March after midnight, and in the year 10020 it throws it back to 23 March after midnight.

[Margin: That any equation other than the one framed to the Alphonsine year drives the equinox from its proper seat further than it should.]

From this it follows that no one can justly find fault with our equation, since none more apt can be produced — unless someone should say that an uneven and irregular equation, varying with the varying length of the year, ought to be applied at different times; and that we long ago ruled out by the practice and custom of the Church.

[Margin: That the equation framed to the mean year cannot justly be faulted.]

CAPVT VII.

Soluuntur dubitationes variae de aequali anni Solaris formula in Calendario nouo praescripta.

Various doubts concerning the uniform formula for the solar year prescribed in the new calendar are resolved.

Although everything that can be brought against the Gregorian correction of the year — so far as concerns the restoration of the equinox to 21 March and its preservation there — can be refuted without difficulty from what we wrote in the two preceding chapters, still, so that the truth may appear more clearly, it will not be useless to set out here, and to resolve, a number of the difficulties which either those who oppose this correction with all their energy commonly raise, or which might occur to someone else.

First, then, in order to overturn this new calendar from its foundations, not a few anxiously and uneasily ask themselves which astronomical tables this Gregorian emendation of the calendar follows — the Alphonsine, the Prutenic, or some others. And whichever it may finally approve, the first foundations of the new calendar seem to them to totter, because, they say, the calculation of no tables published to this day agrees exactly with the heavens: the tables are uncertain and need some vigorous restorer. This, they assert, is the common complaint of all mathematicians. From this they conclude that the new calendar is in no way perfect or perpetual, and therefore will not last through all ages without some change, since its foundation is anything but firm.

[Margin: 1. An argument against the new calendar.]

The answer is that in this work of correction the Prutenic tables were used, as being the more celebrated and more probable in our age. This is why — since those tables teach that sometimes more than 134 years are required for the equinox to anticipate one day in the calendar, and sometimes fewer — the equation of the solar year was framed to the mean length of the year, exactly as if the equinox advanced one day toward the beginning of the month in each interval of 134 years, so that by this mean the excessive slowness of the greatest year and the swiftness of the least might in some measure be balanced against one another.

[Margin: Solution. That the Prutenic tables were used for restoring the calendar.]

Nor does the variety and inconstancy of the astronomical tables tell against the durability or the constancy of the calendar. For as we said in chapter 5, the perfection and perpetuity of the calendar does not consist in this, that it should answer to the motions of the heavens

exactly at every time, and that the equinox should be so fixed and settled on 21 March that it could never be moved from it, whatever equation — ours or any other — were applied. That cannot possibly be done: partly because of the mutability of the tables, whichever we may in the end choose to follow, but most of all because a middle and even path has to be chosen, one that is regular and suited to the grasp of ordinary people, as reason demands and as has been observed in the corrected calendar. The excellence and perpetuity of the calendar consists rather, as was said above, in this: that the cycle of epacts is arranged in it with such art that nothing in it will ever have to be altered in future ages, but the calendar will remain wholly untouched — even if, by the intercalation or the omission of one day, or even of several, by decree of the Supreme Pontiff, the equinox has to be recalled to 21 March, should it be found to have slipped so far from it that it cannot return there of its own accord without this remedy. We shall treat this perpetuity and excellence of the calendar more fully later, when we explain the equation of the lunar year; and there we shall also show by what means the new moons and full moons too can be corrected, if need be, with no change at all made in the cycle of epacts inscribed in the calendar.

[Margin: (continuing) ...astronomical tables does not damage the perfection and perpetuity of the calendar.]

To this may be added what was said in the last chapter: that on our equation and on the Prutenic tables the equinox returns to 21 March even after 20000 years — a point most worthy of observation, for it wonderfully commends the excellence of the new calendar — even though in the meantime it may have strayed now to the 23rd, now to the 19th day. There is nothing absurd in this, since no even and uniform equation of the solar year can be devised that would preserve and hold it perfectly and exactly on the 21st itself; nor is the Church, in the political and civil year, compelled to pursue astronomical niceties, even if that year sometimes diverges from the true motions of the heavens, as we showed in that same preceding chapter. It is enough that she prescribe one day for the political or ecclesiastical equinox, to which the equinox may at set times be restored by the authority of the Roman Pontiff, if it ever departs too far from it — and the calculation of past years shows very clearly that this happens exceedingly rarely.

[Margin: What the perfection of the calendar consists in.]

Next, it seems to tell against the perfection of the new calendar that not even in the present years in which we now live do the equinoxes fall on 21 March, so that the omission of 10 days appears not to have brought the equinox back to 21 March at all. For in our own time it falls, in every intercalary year, not on the 21st but on 20 March. Thus in 1584 it was on the 20th, at about 10 hours after noon; in 1596 it was on the 20th at 9 hours after noon; in 1612 it will be at 8 hours after noon on that same 20th day, and so on in sequence. Moreover, after the year 1640 the equinox will climb to that same 20 March not only in the intercalary years but also in the years that are first after the intercalary ones. For in 1645, which is not bissextile but the first year after a bissextile, the equinox will fall on 20 March at 12 hours 24 minutes after noon; and in 1697, which is likewise the first year after a bissextile, it will fall on 20 March at 9 hours after noon. So from the year 1640 onward the equinoxes of all the bissextile years, and of the years next following them, will fall on 20 March, right up to the year 1700. And although some part of this will be set right by the omission of the intercalary day in 1700, that restoration (as one of our opponents objects, by way of calumny) seems to be no more than paying one debt by contracting another. For the equinoxes of the bissextile years and of the first years after them will indeed be brought back to 21 March by striking out the intercalary day of 1700; but by that very means the equinoxes of the second and third years after the bissextiles will be shifted to 22 March. And this exchange and alternation seems impossible to remove, until at last, after no small number of years, the equinoxes of all the bissextile years, as well as of the three years following, desert 21 March altogether.

[Margin: 2. An argument against the new calendar.]

This doubt must be met by showing that our opponents argue wrongly and maliciously when they use it to prove that the equinox, after the removal of 10 days and under our equation, does not fit the present years. For the years 1584, 1596, 1612, which are cited as examples, are all bissextile. It is no wonder, then, that in them the equinox moves from the 21st toward 20 March, because of the added intercalary day — though it could with perfect justice be assigned to the 21st, since in all those years it occurs after sunset, namely at 10, 9, and 8 hours after noon. And every astronomer knows that at least two days must be allowed to the equinox, on account of common and bissextile years, even if the intercalation made every fourth year agreed most exactly with the solar year — that is, even if the year were truly of 365 days 6 hours. From this too it appears plainly that our adversaries are cunning old hands rather than fair judges of the matter, and that they are looking (as the proverb has it) for a knot in a bulrush, since they cavil at what has been done perfectly rightly. For as far as the present

years are concerned, the equinox has been rightly restored to 21 March, seeing that in intercalary years it climbs to the 20th — which is just what the principle of intercalation requires. And that after the year 1640 the equinox will move further and further toward the beginning of the year, falling on 20 March even in the years that are first after the bissextiles, wonderfully confirms the omission of the intercalary day to be made in 1700 — namely, that in this way the equinox may be drawn back to 21 March in the years after the bissextiles.

[Margin: Solution.]

[Margin: That the restoration of the equinox to 21 March by the omission of the intercalary day in the year 1700 is not paying one debt with another, as certain people allege by way of calumny.]

Nor indeed is this restoration by way of the intercalary day of the year 1700 merely paying one debt with another, as one of our adversaries maliciously charges. For although in the years following 1700, because of that very removal of a day, the equinox of the years that are second and third after the bissextiles will be transferred to 22 March, and long afterwards even to the 23rd, this cannot be charged as a fault against our equation, but against the inequality of the solar year. For since, as was shown above, the equation of the year must be even and regular, so that it may be easily grasped by all peoples, while the length of the year is unequal, now greater, now less, it follows that if an equation is applied that answers to the mean length of the year — the only one that is even and uniform, as the practice of the Church requires — the equinox cannot remain permanently on 21 March, as we showed in the last chapter, but will now slide down to the 22nd and 23rd, now climb up to the 20th and 19th. It will slide down to the 22nd and 23rd when the length of the year is at its greatest, and therefore more than 134 years are required for an anticipation of one day — as happens in our own century, and will happen continuously until the year 2080, because throughout that whole time the tropical year will be greater than the Alphonsine, as is clear from the preceding chapter. But from there it will return to 21 March when the tropical year becomes less than the Alphonsine, since then the equinox needs fewer than 134 years for an anticipation of one day. And on the other hand it will move forward from the 21st to the 20th and the 19th of March when, after it has come back to the 21st because of the least length of the year, as we said, the year is found smaller still than the Alphonsine year.

[Margin: That because of the inequality of the year the equinox recedes from 21 March in both directions.]

[Margin: When the equinox slides down from the 21st to the 22nd and 23rd, and when it returns to the 21st.]

But as soon as the year becomes greater, the equinox will draw back to the 21st from the 19th and the 20th. Thus 21 March, the day assigned to the equinox, holds in a manner the middle place between the 23rd and the 19th, the limits out to which the equinox so runs that it can scarcely run beyond them, not even in the space of very many centuries, but returns from there step by step and of its own accord to the 21st, as was shown in the last chapter. So either this is no borrowing-to-pay at all, or, if it can in any way be called such, it must be reckoned the borrowing not of a bankrupt bent on ruin, but of a prudent householder settling his estate, for a time.

[Margin: Likewise, when it recedes from the 21st to the 20th and 19th, and when it returns from there to the 21st.]

[Margin: That 21 March, the day assigned to the equinox, holds the middle place between the 23rd and the 19th — the limits out to which the equinox can run, since from there it returns of its own accord to the 21st.]

But suppose someone presses the point and urges that from this excursion of the equinox to 23 March and to the 19th (which we assert cannot be avoided) it follows that Easter may be celebrated both in the last month and in the second — which seems absurd. I answer, first, that this can happen only very rarely. For even if the equinox slides down to the 22nd or the 23rd, Easter will nevertheless never on that account be celebrated in the last month unless epact xxij or xxij is in use; and that rarely comes about, since epact xxij or xxij does not come into use in every nineteen-year cycle of epacts, but only in eight of all the 30 cycles of epacts, of which we shall speak later. For in the remaining 22 cycles epact xxij is found alone in 11 cycles, and epact xxij in the other 11, as will appear below from the expanded table of epacts. Add to this that this error, if it ever arises from the nature of the cycle, is very often removed by the dominical letter, so that Easter is celebrated after the equinox and therefore in the first month, even though those epacts are in use and throw their fourteenth moons into the twelfth month. By the same reasoning, although the equinox moves forward to 20 or 19 March, Easter will nevertheless never on that account be thrown into the second month unless epact xxiiij or xxv is running — which likewise will happen very rarely.

[Margin: That Easter rarely falls in the last or in the second month.]

Next, suppose both do happen: even so, this is nothing new or unheard of in the Church of God, since the very same thing must necessarily have occurred in the

days of the Council of Nicaea itself, when the decree on the lawful celebration of Easter was framed — or rather confirmed — as we demonstrated above in chapter 5. Indeed, even if the solar year needed no equation at all, but the equinox were fixed permanently to 21 and 20 March, and the old calendar were retained, Easter would still necessarily be thrown into the second month whenever, with the equinox falling on 20 March (which we showed above can necessarily happen in bissextile years), the fourteenth moon fell on that same 20 March. Nor will anyone justly blame the Catholic Church in this, for sometimes celebrating Easter in the first or in the second month, when the reckoning of the cycle, or the day fixed for the equinox, so requires: since it cannot be avoided in any way, it by no means deserves to be called an error — and all the more so because the Church has been freed from the yoke of the Mosaic law. For was not Easter, before the correction of the calendar, and above all in this century (to say nothing of other past years), very frequently thrown into the second month, and beyond that into the fourth week [?] of that second month [?] — and yet no one dared to condemn her on that account? It is enough that the Church celebrate Easter according to the decrees of the Fathers and of the councils, keeping a certain fixed day of the equinox (even if the equinox does not always fall on it), and using the lunar cycle to find the fourteenth moons, even though these too sometimes differ from the true motion. The only thing that made the minds of astronomers uneasy and anxious before the correction was that they saw this error growing greater day by day, and that it would never be removed unless the year were corrected.

[Margin: That it is nothing new for Easter sometimes to fall in the last or in the second month.]

[Margin: That it ought not to be called an error that Easter is sometimes celebrated in the second month, since this cannot be avoided, on account of the two days that the equinox requires, whether the new calendar is adopted or the old one retained.]

For my own part, together with other most learned men and very many of great weight, I was always of this opinion: that the equinox ought not to have been corrected by the Church, and indeed that she would not have corrected it — although it had run out as far as 11 March — if it had checked its excessive course and begun of its own accord, with no equation applied, to return to 21 March. So far is she from being over-anxious about the true day of the equinox, even if now and then, when that day is not observed, Easter runs into the last or the second month, provided that the day she has prescribed for the equinox holds the middle

place between the limits within which the equinox wanders to and fro. How much more, then, ought we now to be content with the equation that has been made — to be applied in each interval of 400 years according to the mean length of the year, the easiest of all, and one that allows the equinox to be moved from its appointed seat, that is, from 21 March, by an interval of no more than two, or at most three, days? Certainly hardly anyone could establish another even and uniform manner of equating that would do as much. This can be confirmed by the testimony of all who took part in this work of correction: no other, even after a long and prolonged inquiry lasting nearly a whole decade, could occur to them.

Now if it should happen — and I certainly cannot deny that it may happen after many thousands of years, nor did any of those summoned by the Pontiff to correct the year deny it, on account of the uncertain permanence of the astronomical tables — that the equinox should at some time desert 21 March altogether, moving either toward the end of the month or toward its beginning, so that it cannot return to the seat appointed for it (which one of our adversaries has prophesied to us), it has already been said more than once by what means the equinox is to be restored to the 21st, by an extraordinary intercalation or omission of a few days, by edict of the Supreme Pontiff. And this, as we have said, is not inconsistent with the perpetuity of the calendar.

[Margin: That the correction of the calendar would not have been called for, if the equinox had begun to return to 21 March of its own accord.]

Furthermore, it does not seem right to conceal that this advance and retreat of the equinox has place only in the Prutenic tables, and that it was foreseen long beforehand by those who emended the calendar at the command of the Supreme Pontiff — as may be gathered from the *Compendium of the new method of restoring the calendar* sent to the Christian princes, in which both the even and regular equation, adapted to the mean length of the year, and the uneven and irregular one drawn from the doctrine of Copernicus, are described. The former was retained (the latter rejected) as easier and better suited to the use of the Church, as was said above. But if perhaps the Prutenic tables should prove not so reliable as to be able to last long, and the Alphonsine should answer better to the motion of the Sun — as most astronomers seem to affirm — then this advance and retreat of the equinox will have no place at all: the equinox will remain through a long series of centuries in the seat assigned to it, to which it must again be restored if it ever departs from it, just as we said above. This being so, certain people inveigh in vain, so bitterly and abusively, against the restoration of the

new calendar, since they bring and object nothing against it that was not foreseen before the calendar was published.

[Margin: That the retreat of the equinox from the 21st has place only in the Prutenic tables.]

3 It also seems to not a few that this method of equating the solar year, bounded within four hundred years, is

[Margin: 3. An argument.]

[Margin: ... against the new calendar.]

faulty and imperfect, because when it is carried back to earlier ages it does not answer to the motions of the heavens. Ten days were removed all at once in the year 1582, so that the equinox might be restored to 21 March, where it is believed to have stood at the time of the Council of Nicaea. This equation, then, if it had been applied, ought certainly to have offered ten days for removal — and that seems false, since it yields only nine. For since the year 1600 remains bissextile, the years 1200, 800 and 400 would have remained bissextile as well, and the intercalary day would have had to be dropped only in the years 1500, 1400, 1300, 1100, 1000, 900, 700, 600 and 500. Only nine days, therefore, ought to have been removed, and not ten; and consequently the equinox in the time of that Council would have fallen on 20 March, and not on the 21st — which is not true.

[Margin: Solution.]

STILL, the answer must be this: our equation is not obliged to answer to every past year, just as it cannot agree exactly with every future year either, as we said above — and for the same reason: the equation is even and uniform, whereas the year is uneven. Hence it comes about that when the year is at its greatest, the intercalation ought not to be suspended as often as our equation prescribes, whereas when the year is at its least, the intercalary day ought to be dropped more often, as was said above. And since at roughly the midpoint between the birth of Christ our Lord and the year of the correction, 1582 — that is, around the year 880, when al-Battānī lived — the length of the year was found to be the least of all, and therefore the anticipation of the equinox at its swiftest, it is no wonder that our equation does not agree exactly with the times of the Council of Nicaea, since around al-Battānī's time the intercalary day would have had to be dropped more frequently than once in every 134 years. In the same way, for the years now immediately ahead, since the year is at present nearly at its greatest, the intercalary day would have to be dropped more rarely, if the equation had to

answer strictly to the true motion. Since it does not do so, because our equation is uniform, it necessarily follows that, on account of the too frequent removal of the intercalary day in 1700, 1800 and 1900, the equinox will slip from 21 March towards the end of the month, as we showed above.

[Margin: That the equation of the new calendar answers exactly for a number of past and future years, though not for all — which is enough.]

It is enough that the equation should exhibit an equinox not far from the true equinox, whether it be fitted to past years or to future ones, provided only that it now and then agrees with years both past and to come. This the equation of the new calendar performs admirably. For it answers wonderfully to the times of Ptolemy, who flourished around the year of our Lord 130, since it then places the vernal equinox on 22 March, on account of the 11 days that would have been removed up to the year of the correction, in the years 200, 300, 500, 600, 700, 900, 1000, 1100, 1300, 1400 and 1500 (for the remaining centesimal years, 400, 800 and 1200, would have stayed bissextile) — if our equation had then been in use; and it was on about that very day that Ptolemy observed it to occur. Again, the same equation keeps the equinox on 21 March with great exactness for a number of years to come, namely around the years of our Lord 1653, 2080, 2296, 2512, 2724, 3156, 3368 and 15004[?], at which times we made it plain in the preceding chapter that the equinox falls about 21 March. Our equation, therefore, is rightly to be said to agree with both past and future years, since its equinox stands, so to speak, in the middle of the advance and retreat of the true equinox — that is, it falls now before the true equinox, now after it, and now coincides with it, just as the mean new moons do when compared with the true new moons.

[Margin: How the equation of the new calendar, carried back to the times of the Council of Nicaea, yields ten days for removal.]

WHAT is more, it is not even entirely true, as our opponents assert, that the equinox falls on 20 March at the time of the Council of Nicaea if the equation is fitted to years past. For if our equation is properly carried back to earlier years, we shall find that it offers ten days for removal down to the time of that Council. For in the year 300 — from which the year of that Council was not far distant — one further day would have had to be removed, if this equation had then been in use, and accordingly the equinox would be shown around that time on 21 March. So our equation agrees not only with the years in which Ptolemy lived, but also with the times of the Council of Nicaea, which was held not long after Ptolemy's day. Our opponents therefore act maliciously and slyly when they carry our

equation back only as far as the year 500, whereas they ought to carry it back to the year 300, which was nearer to the Council than the year 500 was.

[Margin: How, if the equation of the new calendar had begun at the Council of Nicaea, it yields ten days for removal down to the year 1600.]

SUPPOSE our opponents press the point: granted that the equation, applied backwards, removes ten days down to the year 300 inclusive, which was close to the Council of Nicaea, nevertheless if the same equation had begun at the time of the Council of Nicaea and been carried forward to our own times, it would remove only nine days, as the third argument maintained. The answer is that this is not absurd, for the reason given just above — namely that in the intervening period the year was at its least. It can also be said that the four-hundredth years would then have had to be arranged differently. For since the equinox then fell on 21 March — in the year 300, that is, and at the time of the Council — the intercalary day would have had to be dropped in the year 400, so as to hold the equinox in its place; and therefore, down to the year 1600 inclusive, ten days would have had to be removed in these centesimal years: 400, 500, 600, 800, 900, 1000, 1200, 1300, 1400 and 1600 — every fourth centesimal year remaining bissextile, as 700, 1100 and 1500 would have been.

[Margin: That the removal of ten days was necessary if the equinox was to be restored from the 11th to the 21st, whether or not the equation offers ten days for removal down to the Council of Nicaea.]

BUT however that may be — whether or not our equation answers to the year of the Council of Nicaea — it is certain and settled in everyone's judgement that ten days had absolutely to be removed, so that the equinox might be called back from 11 March, to which it had advanced, to the 21st; just as, if it had been necessary to call it back to the 25th, the day of the Lord's Incarnation (which not a few desired), fourteen days would have had to be removed — even though from the Incarnation of the Lord down to our own times the equinox has not moved forward from its place by that many days; for it is clearly established from Ptolemy's observations that at the time of the Incarnation of the Word of God the equinox fell on 23 March.

[Margin: A general reply to all the arguments that can be brought against the equation of the equinox.]

4 AND let this be our answer to the arguments that might seem to shake, by some middle course, the equation of the new calendar. To these, however, and to all others whatever that can in the end be brought forward, it will be possible to

reply by saying that all the arguments are drawn from the true motion, and that from the Prutenic tables — a motion which is highly uneven and irregular, cannot be fitted to any cycle, and is therefore unsuited to overturning our equation. For our equation rests on the mean motion, which is uniform; so that by its steadiness and uniformity it finely and neatly compensates for the uneven and irregular advance and retreat of the true equinox over many thousands of years, and never lets the equinox depart from the true one by more than two days at most, or a little more, sometimes running ahead of it, sometimes lagging behind. And that is quite enough for the due celebration of Easter according to the decree of the Church, which in the reckoning of time employs and considers mean and regular motions — or rather cycles — by very ancient custom, leaving the true and uneven motions to the curiosity and diligence of astronomers.

[Margin: How it is to be understood ...]

WHEN, however, we say that our equation agrees with the mean equinox and not with the true one, the "mean equinox" is not to be understood

[Margin: ... that the equinox of the new calendar agrees with the mean equinox.]

as astronomers understand mean motions, but as the equinox of the mean, or Alphonsine, year — which, once our equation is applied, will almost always cling to 21 March.

5. IF perhaps, after a long interval of time, it should happen (and we frankly admit that it can happen, because of the unsteadiness of the astronomical tables) that the equinox of the new calendar departs unduly from the true equinox, it will have to be restored, as has often been said, to 21 March, by an intercalation, or by an omission of intercalation applied out of the regular order; and thereafter either the same rule of equating is to be retained as before, or else another better suited to that age is to be prescribed on the astronomers' judgement — yet in such a way that no change is made in the calendar so far as the arrangement of the epacts is concerned. On this reckoning, even though the equinox may at some time need restoration, or the plan of the equation need changing, the calendar itself is nonetheless called perpetual in the Bull of Gregory XIII, and is of such a kind that it can be adapted to any length of the year whatever by interrupting or varying the equation, while it meanwhile remains, together with the epacts, untouched, stable and wholly unchangeable — as will be explained more plainly below, in dealing with the equation of the Moon.

[Margin: Why the new calendar is called perpetual by the Pontiff.]

THEREFORE what argument can be devised at last that would have any force against the calendar as being perpetual in the sense stated? For although the equation of the solar year does not preserve the equinox on the 21st day over a long stretch of time so well as to need no emendation, the calendar is not on that account to be judged faulty or imperfect, since with nothing in it altered the equinox can be corrected without any trouble, by varying the equation in some way, if that seems good. And certainly no calendar can be constructed in any other way than the one described that would be either perpetual or long-lasting, since everything the astronomers have subtly and acutely handed down about the length and the unevenness of the solar year is uncertain and doubtful — so that of no equation of the year, whether framed to the mean motion or to the true, can we promise ourselves a steady, perpetual or long-lasting truth.

[Margin: That no calendar can be built in any other way than that in which the Gregorian is built.]

6. IF, then, some equation of the solar year is set up together with a lunar cycle laid out through the days of the calendar, and so contrived that nothing in the calendar ever has to be altered, even should some error be detected in keeping the equinox at its appointed seat, so that the equation of the solar year has to be changed in the way we set out above — then at last the business of the calendar will have been splendidly managed, and it can rightly and with the best justice be reckoned perfect and complete. Of just this kind is the new calendar published by Gregory XIII, Supreme Pontiff, in the year 1582, as is partly clear from what has been said, and will appear partly — and indeed far more evidently — from what remains to be said. If those who think less well of the new calendar would weigh this with a sincere and untroubled mind, they would surely not pour out so many words and insults against the new calendar so rashly and thoughtlessly.

[Margin: What is required for a calendar to be called complete and long-lasting.]

And indeed anyone can gather all this without any difficulty from the *Compendium of the restoration of the calendar* sent to the Christian princes, where it is most plainly declared that the cycle of the epacts can be adapted to any length of the year — so much so that, once that cycle has been set out in the calendar, and once the rule of intercalation at every four-hundredth year has been applied (as has been explained), together with the equation of that cycle, which we shall discuss below, the years and months will thereafter so agree with the reckoning of the Sun and Moon that no further discrepancy or disagreement

of any consequence can arise. And if it should ever happen that some discrepancy does arise, the same *Compendium* clearly testifies that everything can be restored to its proper state by a very easy method. For that reason a twofold table of the equation of the epacts is constructed in it: one agreeing with the Alphonsine year, which is mean and uniform, the other answering to the year of Copernicus, which is uneven and irregular. So no one can justly object that we failed to foresee what might be urged against the calendar, or failed to understand in what sense it can be called perpetual and never liable to any change.

BUT enough has been said here about the exposition of the new calendar so far as the equinox is concerned. That our equation, proceeding by four hundred years, surpasses all others that can be devised may be established clearly enough from what has been said so far; but it will appear more clearly from chapter 22, where we shall subject it to astronomical calculation from the year 1600 to the year 5000. There it will appear plainly enough that this equation of ours for the solar year, together with the equation of the lunar year (of which later), does not depart from the decrees of the Councils and of the Pontiffs — something that can hold of no other equation that might be set up, as will be clearly established if any other equation whatever is examined by astronomical calculation. Let us therefore now turn to the exposition of the lunar year, where the nature of the nineteen-year cycle of the golden number must be laid open, together with the cycle of the epacts, and the reason why, once the golden numbers were removed from the calendar, epacts were substituted in their place. Then we must treat of the solar cycle, or the cycle of dominical letters, and of finding the movable feasts. Finally, at the end, we shall briefly set down certain easy rules bearing on the ecclesiastical computus.

CAPVT VIII.

How the nineteen-year cycle of the golden number equalizes 19 solar years.

1

THE lunar year, like the solar year of which we spoke in chapter 5, is of two kinds: the one civil or political, the other astronomical. The civil year consists of whole days and is of two sorts, common and embolismic. The common year contains sometimes 354 days, sometimes (which rarely happens) 353; the former is usually called full, the latter hollow or defective, and each comprises 12 lunations. The embolismic year, for its part, generally contains 384 days, but

sometimes (though more rarely) 383; the first is likewise called full, the second hollow; and each is made up of 13 lunations. Nor

[Margin: What the civil lunar year is, of how many kinds, and how long.]

[Margin: What the lunar year, both common and embolismic, full and hollow, is.]

can the civil lunar year be arranged or reckoned in the calendar otherwise than by whole days — no more than the solar year can, the reason for which we gave fully in chapter 5. For the same relation of the solar year holds good for the lunar year.

[Margin: What the astronomical lunar year is and how long, both the common and the embolismic.]

2 THE mean or uniform astronomical lunar year (for of the true one, which is highly uneven and variable and belongs to the astronomers, nothing need be said here) comprises, besides whole days, a number of hours and fractions of hours. Thus the common year of 12 lunations, by the Prutenic tables, which are today held the more reliable, contains 354 days, 22 minutes of a day, 1 second, 35 thirds, 19 fourths — that is, 354 days, 8 hours, 48 minutes, 38 seconds, 7 thirds, 36 fourths. The embolismic year of 13 lunations contains 383 days, 53 minutes of a day, 51 seconds, 43 thirds, 16 fourths — that is, 383 days, 21 hours, 32 minutes, 41 seconds, 18 thirds, 24 fourths.

[Margin: The length of the astronomical lunar month according to the mean motion.]

A single lunation, or lunar month, taken according to the mean course — that is, the interval of time from one mean new moon to another — comprises 29 days, 31 minutes of a day, 50 seconds, 7 thirds, 57 fourths; that is, 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 48 fourths. The size of the lunar month is nevertheless set a little larger by Ptolemy and by Nicolaus Copernicus, and a little smaller by the Alphonsines and by most computists. Ptolemy indeed puts it at 29 days, 12 hours, 44 minutes, 3 seconds, 12 thirds; the Alphonsines make it 29 days, 12 hours, 44 minutes, 3 seconds, 2 thirds. For my own part, by dividing the whole circle of 360 degrees by the Moon's elongation from the Sun in one day, which in the Prutenic tables is 12 degrees, 11 minutes, 26 seconds, 41 thirds, 29 fourths, 57 fifths, 49 sixths, 37 sevenths, I find the lunar month to be 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 38 fourths, 9 fifths, 20 sixths, 5 sevenths. But in what follows we shall adopt the former value, which is larger than this by 10

fourths. That, perhaps, is why the Prutenic tables chose the intermediate quantity, as the more likely.

[Margin: How great the half and the quarter of the lunar month are.]

From this it follows that half a lunar month comprises 14 days, 45 minutes of a day, 55 seconds, 3 thirds, 58 fourths — that is, 14 days, 18 hours, 22 minutes, 1 second, 35 thirds, 24 fourths; and a quarter of the same lunar month, 7 days, 22 minutes of a day, 57 seconds, 31 thirds, 59 fourths — that is, 7 days, 9 hours, 11 minutes, 0 seconds, 47 thirds, 36 fourths. And although this reckoning of the lunar month by days, hours and fractions of hours cannot be written into the calendar, which contains only whole days, knowledge of it is nonetheless indispensable if the civil or political lunar months are to be so established that they can agree with the solar year. Let us now explain by what method this is done by means of the nineteen-year cycle of the golden number.

[Margin: Meton the Athenian, the inventor of the nineteen-year cycle of the golden number.]

3 AMONG the most ancient astronomers who concerned themselves with the course of the Moon and its harmony with the solar years, then, Meton the Athenian is found, who flourished about the 86th Olympiad, roughly 431 years before the birth of Christ. He announced that in 19 solar years 235 lunar months are completed. From this the whole of that span of time embracing 19 solar years was called the great year, [Greek: ἐννεαδεκάτηρις(?)] (enneadekatēris, "nineteen-year period" — the printed form is compressed and its ending does not resolve with certainty)], that is, the Metonic nineteen-year period.

[Margin: The Metonic nineteen-year year.]

This number won such favour that it was set up in the marketplace at Athens and in other notable cities, and was called golden by the Romans; and it remained in common use right down to the Gregorian correction, because men judged that by it the beginnings and ends of the months stood in a fixed order. And since in 19 years four bissextile years are contained, with three years left over; in 38 years, nine bissextiles, with two years left over; and in 57 years, fourteen bissextiles, with one year in excess; while in 76 years there are exactly nineteen bissextiles — Hipparchus adopted this span of 76 years (a number produced by multiplying 19 by 4), who flourished about 128 years before Christ our Lord, in the 162nd Olympiad; and for that reason the same span was called by Ptolemy and other writers the Callippic period, in which 940 lunar months are completed.

[Margin: The Callippic period of 76 years.]

But neither the Metonic year nor the Callippic period agrees exactly with the solar years, as will be clearly established from what we shall presently add.

[Margin: The length of the civil lunar month.]

4 IN the nineteen-year cycle the civil lunar month is fixed at 29 days and 12 hours only, the fractions of the hours being left aside. But since hours cannot be written in the calendar, the numbers of the nineteen-year cycle are laid out for finding the new moons by this device, through the days of the year: the lunations, that is, the lunar months, contain 30 and 29 days alternately.

[Margin: Why the lunations in the calendar run alternately of 30 and 29 days.]

For thus it comes about that the 12 hours granted in excess to the preceding lunation of 30 days are taken away again by the following lunation of 29 days; that two lunations comprise 59 days; and that twelve lunar months make 354 days, which constitute the civil lunar year. And therefore the common civil lunar year differs by 11 days from the common solar year of 365 days. From this it results that the new moons of the following year generally fall (for sometimes this order is interrupted, the nineteen-year cycle requiring it, as we shall say in the following chapter 9) 11 days earlier than the new moons of the year before; so that if, for example, some new moon falls on the 29th of any month in a given year, in the following year it will fall on the 18th of the same month; in the third year, on the 7th; and so on in turn, until 19 years are completed, after which that new moon falls again on the 29th day.

[Margin: Why the new moons in any given year generally fall 11 days earlier than in the year immediately preceding.]

The reason is that all the lunar months contained in 19 solar years comprise nearly as many days and hours as make up 19 solar years. For 19 solar years (if you assign to each, following the institution of Julius Caesar, 365 days and 6 hours) contain 6939 days and 18 hours, in which 235 lunations and a little more are completed according to the Moon's mean course; and just so many civil lunations are included in the same 19 solar years. For 235 mean lunations require 6939 days and, over and above, 16 hours only, 32 minutes, 27 seconds, 18 thirds, 0 fourths — so that the 19 solar years exceed the 235 mean lunations by 1 hour, 27 minutes, 32 seconds, 41 thirds, 0 fourths.

[Margin: How many days 19 solar years contain.]

[Margin: In 19 solar years there are 235 lunations.]

Hence it comes about that the mean new moons, when 19 solar years have passed, do indeed fall on the same days of the months on which they fell 19 years before, but not at exactly the same hours: somewhat earlier, by just the amount of excess we have stated. So small is the interval of time by which the Moon runs ahead of the seats appointed to it in the calendar over 19 years.

[Margin: How great the difference is between 19 solar years and 235 mean lunations.]

From this it follows that in 76 years — that is, in four nineteen-year cycles — the Moon anticipates those same seats by 5 hours, 50 minutes, 10 seconds, 44 thirds, 0 fourths; and at length, in $312\frac{1}{2}$ years, by almost a whole day. Computists with Hipparchus would have it that the Moon runs ahead of its seats by one day in 304 years, because they make one lunation smaller than we do, as we have said. But more truly, as we have shown, the Moon anticipates its seats by one day in $312\frac{1}{2}$ years. For according to the quantity of a single lunation given above, in $312\frac{1}{2}$ years it runs ahead of its seats by 23 hours, 59 minutes, 52 seconds, 49 thirds, which fall short of a whole day by only 0 hours, 0 minutes, 7 seconds, 11 thirds; and to anticipate these there are still required 23 days and 17 hours — so that the Moon truly anticipates one day in $312\frac{1}{2}$ years and 23 days 17 hours. I say this against certain people who stubbornly contend, with Hipparchus, in defence of

[Margin: How great the Moon's anticipation is in 19 years, and how great in 76.]

[Margin: The lunations anticipate one day in $312\frac{1}{2}$ years, and not in 304 years, as some would have it.]

the Moon anticipates one day in 304 years. Yet in chapter 11, in the table of the equation of the epacts, we do anticipate the Moon's equation — which we set at $312\frac{1}{2}$ years — by 23 days 17 hours. Still, these neglected days and hours barely amount to 100 years in 481436 years, and so they scarcely produce an error of 8 hours in the lunations, as we shall point out in the same chapter 11, Num. 11. This is why the new moons, from the Council of Nicaea down to our own age, have run forward by four days and more toward the beginnings of the months.

5. Now I shall make it plain that 235 **civil** lunations as well are contained in 19 solar years. Since in any given year there are 12 lunations, alternately of 30 and 29 days, making up 354 days, in 19 years there will be 228 lunations, and over and above them 209 days, made up out of the 11 days by which — as we said above — the solar year exceeds the lunar. Out of these 209 days

there are formed 7 extraordinary lunations, which are called embolismic: six of them of 30 days each, and one of 29 days, as we shall say below. These 7 extraordinary lunations, added to those 228, make up the number of 235 lunations. The lunar cycle is therefore rightly said to comprehend 19 solar years, since in that stretch of time 235 lunations are completed — precisely as many as can occur in the same interval according to the Moon's mean course, except that there still remains the difference we mentioned, of 1 hour, 27 minutes, 32 seconds, 41 thirds, 0 fourths.

[Margin: That 235 civil lunations are contained in 19 years.]

6. But let me teach the matter somewhat more exactly: how the 235 civil lunations comprehended in 19 solar years fill out the time of the same number of astronomical lunations reckoned by the mean motion. For since in the civil lunations the fractions of an hour are dropped — namely 44 minutes, 3 seconds, 11 thirds, nearly a whole hour, in each lunation — the civil lunations do not appear capable of being made equal to the astronomical ones. Nevertheless, you may learn from what follows how beautifully those discarded fragments are compensated by the bissextile days and by the 7 extraordinary lunations. The 235 civil lunations which we said are contained in 19 solar years, if $29\frac{1}{2}$ days are assigned to each — that is, if we make them alternately of 30 and 29 days (which we affirmed the Cycle requires) — make up 6932 days and 12 hours. But the same number of astronomical lunations make 6939 days, 16 hours, 32 minutes, 27 seconds, 18 thirds, 0 fourths. To fill out this span, then, the 235 civil lunations fall short by 7 days and $4\frac{1}{2}$ hours and a little more; and this deficit is made good as follows. In the whole nineteen-year cycle, over and above the whole days of the solar years, there remain 114 hours, gathered from the 6 hours dropped in each year, which make 4 intercalary days and 18 hours. Those 4 days, in the 4 bissextile years, are assigned to four lunations of February that have 29 days, so that they may contain 30. For on account of the added day, which is not marked in the calendar, that lunation which includes the said intercalary day is increased by one day, so that if it was of 29 days it becomes one of 30; but if it had 30 days it becomes one of 31 — contrary to the nature and condition of lunations, which nevertheless cannot be avoided, as will be said later in chapter 17. The civil lunations have therefore now been increased by four days, so that they fall short only by 3 days and $4\frac{1}{2}$ hours and a little more; and this deficit too we make good in the following way. Of the 7 embolismic or extraordinary lunations, we assigned 3 days to the first six, when we made

each of them 30 days, so that all six exceed six ordinary lunations of $29\frac{1}{2}$ days by six times twelve hours — that is, by three days. There will now be lacking to us only $4\frac{1}{2}$ hours and a little more. Indeed, since to the seventh and last extraordinary lunation, which in the Cycle contains only 29 days, we gave 12 hours which it does not have (for we made it, like the others, of $29\frac{1}{2}$ days, when we said that all 235 civil lunations comprehend 6932 days and 12 hours), there will be lacking $16\frac{1}{2}$ hours and a little more. These are restored by those 18 hours which, over and above the 4 intercalary days, we said were left over in the 19 years; and there will remain that same difference of 1 hour, 27 minutes, 32 seconds, 41 thirds, by which 19 solar years exceed 235 mean lunations. Aptly and neatly, then, the Moon's nineteen-year cycle agrees with 19 solar years, since the 235 civil lunations comprehended in them fill out very nearly the time of the same number of mean astronomical lunations, as we have explained.

[Margin: How the 235 civil lunations contained in 19 years fill out the time of the same number of mean lunations, even though in each of them 44 minutes, 3 seconds, 11 thirds of one hour are dropped.]

Perhaps the point will be grasped more clearly and distinctly in this way. The 228 civil lunations comprehended in 19 solar years, if we assign to each year 12 lunations alternately of 30 and 29 days, make up 6726 days. If to these are added the 209 days gathered from the 11 days which are left over, beyond the 12 lunations, in each solar year, the sum of days will come in all to 6935. If in turn there are added to these the 4 intercalary days and the 18 hours contained in the 19 solar years, the result will be 6939 days and 18 hours — as many as are found in the solar years. And so, even though the 235 lunations, each being set at $29\frac{1}{2}$ days (except the last, which has only 29 days), make up only 6932 days, there are nevertheless inserted and added out of the regular order, over the whole compass of the nineteen-year cycle, the remaining $7\frac{3}{4}$ days. These are collected partly from the 4 intercalary days and 18 hours, partly from the 3 days which we assigned over and above their due to the six extraordinary lunations, so that the number of 6939 days and 18 hours may result — which is about what is required to complete 235 mean astronomical lunations. For this span of 235 lunations differs from that of the 19 solar years by only 1 hour, 27 minutes, 32 seconds, 41 thirds, as was said above. And these $7\frac{3}{4}$ days, grafted in out of the regular order, make up very nearly those 44 minutes, 3 seconds, 10 thirds, 48 fourths of one hour which are dropped in each civil lunation, and also the 12 other hours which we subtracted from the last extraordinary lunation — since we made that one of only 29 days, whereas all the others contain $29\frac{1}{2}$ days, apart from the six earlier

extraordinary ones, each of which consists of 30 days. For 44 minutes, 3 seconds, 10 thirds, 48 fourths, multiplied into 235 lunations, yield 7 days, 4 hours, 32 minutes, 27 seconds, 1 third, 20 fourths. If to these are joined those 12 hours dropped in the last extraordinary lunation, the number of days becomes 7 days, 16 hours, 32 minutes, 27 seconds; and this differs from the figure of 7 days 18 hours by only 1 hour, 27 minutes, 32 seconds, 58 thirds, 40 fourths — very nearly the difference which we said above holds between 235 astronomical lunations reckoned by the Moon's mean course and 19 solar years. For we defined that difference as 1 hour, 27 minutes, 32 seconds, 41 thirds, so that the discrepancy is only 0 hours, 0 minutes, 0 seconds, 17 thirds, 40 fourths — which is of no consequence.

[Margin: How in 19 years the 44 minutes, 3 seconds, 11 thirds dropped in each civil lunation are made good, together with the 12 hours taken away from the last extraordinary lunation.]

This, then, is the reckoning of the 19-year lunar cycle, or golden number, so much celebrated by everyone — which Meton of Athens is said to have devised, with truly admirable ingenuity, around the 86th Olympiad, so that it has deservedly been adopted among almost all nations for finding the new moons.

CAPVT IX.

How the golden numbers are arranged in the calendar; and why, once they were removed, the epacts were substituted in their place.

1

Since the ancients had found that the new moons return to the same days after 19 years have run out, they wrote down in the calendar the same number of numerals, from 1 through 19, which they called "golden" (perhaps from their usefulness in tracking down the new moons, or — as others prefer — because they were marked in gold letters), setting them beside those days on which, in the space of any of the 19 years, the new moons fell. Thus they prefixed 1 to the day on which, with golden number 1 current, the new moon occurred; 2 to the day on which the new moon fell with golden number 2 current; and so on for the rest. In doing this, however, they carefully saw to it that the lunations should be alternately of 30 and 29 days, and that the new moons of one year should anticipate the new moons of the preceding year, generally by 11 days — on account of those 11 days by which the common solar year of 365 days exceeds the common lunar year of 354 days.

[Margin: The setting-down of the golden numbers in the calendar.]

2. From this setting-down of the golden numbers there emerged among them an order and sequence of the following kind: in the calendar they do not keep the natural order of the numbers, but the larger number generally precedes the next smaller one by 11 days, on account of those 11 days by which the solar year exceeds the lunar. Thus, if (for example) golden number 1 is placed near some day of any month, the next larger golden number, 2, runs ahead of it toward the beginning of the month by eleven days — that is, with ten days interposed — because in the following year the new moon of the same month precedes the previous year's new moon by eleven days. In the same way golden number 1, which in the natural series of numbers follows immediately after golden number 19, precedes golden number 19 in the calendar, toward the beginning of the month, by eleven days. And the same principle holds for the rest of the golden numbers. Very rarely does the larger precede the next smaller one by only ten days, and far more rarely by twelve — though this does happen from time to time, the nature of the nineteen-year cycle requiring it.

[Margin: What order there is among the golden numbers in the calendar.]

3. From this it comes about that in the calendar each following golden number is produced by the addition of eight to the preceding golden number — casting out 19, however, if the sum turns out to be greater than 19 — or (what comes to the same thing) by the subtraction of 11 from the preceding golden number, with 19 first added if the preceding golden number was not greater than 11, so that the subtraction can be performed. Conversely it follows that each preceding golden number is in turn formed by the addition of 11 to the following one, casting out 19, however, if the sum turns out to be greater than 19; or (and this comes to the same) by the taking away of 8 from the following golden number, with 19 first added if the following number was not greater than 8.

[Margin: How the following golden number is generated from the one immediately preceding, and conversely. In the calendar a smaller golden number generally follows immediately after a larger preceding one, whereas a larger does not follow immediately after a smaller.]

4. From the same arrangement of the golden numbers in the calendar there follows this sort of linkage among them: the following number, if it is smaller than the preceding one, follows immediately after it; but if it is

larger, it does not follow immediately, but in the third place, with one day left empty. In certain places of the calendar, however, this is not observed; occasionally, though rarely, a larger number does follow immediately after a smaller one, the nineteen-year cycle necessarily requiring this — namely, that the lunations be made roughly alternately of 30 and 29 days. And so, once you know the golden number written at the beginning of January (whether it stands on the first day or on the second — at the time of the Council of Nicaea golden number 3 was set against the first day of January; but now, after the correction of the calendar, if the golden numbers were to be written into the calendar, golden number 9 would have to be prefixed to the second day), all the other golden numbers that follow will be formed from it by the addition of 8 or the subtraction of 11, as has been said, this order being kept: that a smaller follows a larger immediately, but a larger does not follow a smaller immediately — with a few places in the calendar excepted, of which we shall say something shortly. Likewise, once you know the golden number that is the last one in December (whether it occupies the last day or the next-to-last), all the other preceding golden numbers will be formed from it by the addition of 11 or the subtraction of 8, and so on. But since no single rule can be given for those places in which a larger number follows a smaller immediately — because it is not always the same golden number that is placed at the beginning of January or at the end of December, but one succeeds another until all the golden numbers have occupied the beginning of January, the equation of the Moon requiring this, as we shall say below — we shall more easily arrange those same golden numbers in the calendar by means of the epacts written in the calendar, whose arrangement is both very easy and unchanging, as we shall show a little later.

[Margin: On what principle all the rest are written into the calendar from the first golden number of the calendar, or from the last.]

5. Still, the arrangement of the golden numbers in the calendar should not be passed over — the arrangement the Church used before the Gregorian correction, and would now use after the correction if golden numbers, and not epacts, had to be set out in it — so that it may be understood in what places a larger golden number follows immediately after a smaller. Suppose, then, that the number 3 is set against the first day of the year, as was done in the time of the Council of Nicaea. All the other golden numbers will be formed by continual addition of 8, always casting out 19 when the sum turns out greater than 19, and by placing the smaller immediately

under the larger, but the larger not immediately under the smaller — with these few places excepted, so that the lunations may be alternately of 30 and 29 days. On 3 February let the number 19 be written immediately under the smaller number 11; and on 6 April, 4 June, and 2 August, the number 16 immediately under the smaller number 8. Likewise on 3 October and 1 December, the number 13 immediately under the smaller number 5. Finally, once all the golden numbers have been arranged in this order, let golden number 19 be moved up in July, and in all the other five months that follow to the end of the year, to the day above, so that it may be placed immediately under the smaller number 11; and in the same months let the smaller number 8 be written not immediately under 19, but with one day left empty. I am well aware that Campanus and some others put the number 13 in December not against the first day but against the second, together with golden number 2. But since everyone else objects to this — on the ground that it is absurd for two new moons within one nineteen-year cycle to fall on the same day, such as those indicated by golden numbers 13 and 2 — since on Campanus's

[Margin: In what places a larger golden number follows immediately after a smaller in the old calendar.]

arrangement these fall on 2 December; indeed, since the very rationale of the lunations teaches the contrary, as we shall explain a little below in this same chapter, Num. 9, we have preferred, with the other computists, to write the number 13 against 1 December, immediately under the smaller number 5, which is attached to the last day of November. In this way, then, the golden numbers were placed in the calendar according to the mind of the Council of Nicaea before the correction.

6. But at the present time, after the correction, they would have to be placed thus, if we wished to use them for finding the new moons. With golden number 9 written against 2 January, all the others would be formed by continual addition of 8, as before, with these places excepted on account of the alternating lunations of 30 and 29 days. Against 5 February, 5 April, 3 June, 1 August, 29 September, and 27 November, golden number 14 would have to be written, immediately after the smaller golden number 6. Likewise on the last day of December golden number 19 would have to be set, immediately under the smaller number 11. But come — so that this difference may appear more clearly, let us set both calendars before our eyes, with the golden numbers arranged in the way we have described.

[Margin: In what places a larger golden number follows immediately after a smaller in the new calendar of our own time, if golden numbers were to be written into it.]

SEQVITVR CALENDARIVM ECCLESIASTICVM, QVO ECCLESIA A CONCILIO NICÆNO vsque ad anni correctionem à Gregorio XIII. factam vsa est.

There follows the ECCLESIASTICAL CALENDAR which the Church used from the Council of Nicaea down to the correction of the year made by Gregory XIII.

Ianuarius. [January]

Column heads as printed: **Aur. num.** (*aureus numerus* — golden number) | **Lit. Dominic.** (*littera dominicalis* — dominical letter) | [untitled — the Roman-calendar day reckoning] | **Dies mensis.** (day of the month)

Aur. num.	Lit. Dominic.		Dies mensis.
iii	A	Calend.	1
	b	iiij	2
xi	c	iiij	3
	d	Prid.	4
xix	e	Non.	5
viii	f	viii	6
	g	vii	7
xvi	A	vi	8
v	b	v	9
	c	iiii	10
xiii	d	iii	11
ii	e	Prid.	12
	f	Idus.	13
x	g	xix	14

Aur. num.	Lit. Dominic.		Dies mensis.
	A	xviiij	15
xviii	b	xvii	16
vii	c	xvi	17
	d	xv	18
xv	e	xiiii	19
iiii	f	xiii	20
	g	xii	21
xii	A	xi	22
i	b	x	23
	c	ix	24
ix	d	viii	25
	e	vii	26
xvii	f	vi	27
vi	g	v	28
	A	iiii	29
xiii	b	iii	30
iii	c	Prid.	31

Februarius. [February]

Aur. num.	Lit. Dominic.		Dies mensis.
	d	Calend.	1
xi	e	iiiij	2
xix	f	iiij	3
viiij	g	Prid.	4
	A	Non.	5
xvi	b	viiij	6
v	c	vij	7
	d	vj	8
xiiij	e	v	9
ij	f	iiiij	10
	g	iiij	11

Aur. num.	Lit. Dominic.		Dies mensis.
x	A	Prid.	12
	b	Idus.	13
xviiij	c	xvj	14
vii	d	xv	15
	e	xiiiij	16
xv	f	xiiij	17
iiiij	g	xij	18
	A	xj	19
xii	b	x	20
j	c	ix	21
	d	viiij	22
ix	e	vij	23
	f	vj	24
xvii	g	v	25
vj	A	iiiij	26
	b	iiij	27
xiiiij	c	Prid.	28

Martius. [March]

Aur. num.	Lit. Dominic.		Dies Mensis.
iii	d	Calend.	1
	e	vi	2
xi	f	v	3
	g	iiii	4
xix	A	iii	5
viii	b	Prid.	6
	c	Non.	7
xvi	d	viii	8
v	e	vii	9
	f	vi	10
xiii	g	v	11

Aur. num.	Lit. Dominic.		Dies Mensis.
ii	A	iiii	12
	b	iii	13
x	c	Prid.	14
	d	Idib.	15
xviii	e	xvii	16
vii	f	xvi	17
	g	xv	18
xv	A	xiiii	19
iiii	b	xiii	20
	c	xii	21
xii	d	xi	22
j	e	x	23
	f	ix	24
ix	g	viii	25
	A	vii	26
xvii	b	vj	27
vi	c	v	28
	d	iiii	29
xiii	e	iii	30
iii	f	Prid.	31

Aprilis. [April]

Aur. num.	Lit. Dominic.		Dies Mensis.
	g	Calend.	1
xj	A	iiij	2
	b	iii	3
xix	c	Prid.	4
viiij	d	Non.	5
xvj	e	viiij	6
v	f	vij	7
	g	vj	8

Aur. num.	Lit. Dominic.		Dies Mensis.
xiiij	A	v	9
ij	b	iiij	10
	c	iiij	11
x	d	Prid.	12
	e	Idus.	13
xviiij	f	xviiij	14
vij	g	xvij	15
	A	xvj	16
xv	b	xv	17
iiij	c	xiiiij	18
	d	xiiij	19
xij	e	xij	20
j	f	xj	21
	g	x	22
ix	A	ix	23
	b	viiij	24
xvij	c	vii	25
vj	d	vi	26
	e	v	27
xiiiij	f	iiij	28
iiij	g	iiij	29
	A	Prid.	30

Maius. [May]

Column head for the dominical letters is printed in the plural here: **Lit. Dominicales.**

Aur. num.	Lit. Dominicales.		Dies Mensis.
xj	b	Calend.	1
	c	vj	2
xix	d	v	3
viiij	e	iiij	4

Aur. num.	Lit. Dominicales.		Dies Mensis.
	f	iii	5
xvj	g	Prid.	6
v	A	Non.	7
	b	viiij	8
xiiij	c	vij	9
ij	d	vj	10
	e	v	11
x	f	iiiij	12
	g	iiij	13
xviiij	A	Prid.	14
vij	b	Idib.	15
	c	xvij	16
xv	d	xvj	17
iiiij	e	xv	18
	f	xiiiij	19
xij	g	xiiij	20
j	A	xij	21
	b	xj	22
ix	c	x	23
	d	ix	24
xvij	e	viiij	25
vj	f	vij	26
	g	vj	27
xiiiij	A	v	28
iiij	b	iiiij	29
	c	ij	30
xj	d	Prid.	31

Iunius. [June]

Aur. num.	Lit. Dominic.		Dies mensis.
	e	Calend.	1

Aur. num.	Lit. Dominic.		Dies mensis.
xix	f	iiij	2
viii	g	iii	3
xvi	A	Prid.	4
v	b	Non.	5
	c	viii	6
xiii	d	vii	7
ii	e	vi	8
	f	v	9
x	g	iiii	10
	A	iii	11
xviii	b	Prid.	12
vii	c	Idus.	13
	d	xviii	14
xv	e	xvii	15
iiij	f	xvi	16
	g	xv	17
xii	A	xiiii	18
j	b	xiii	19
	c	xii	20
ix	d	xi	21
	e	x	22
xvii	f	ix	23
vi	g	viii	24
	A	vii	25
xiiii	b	vi	26
iii	c	v	27
	d	iiii	28
xi	e	iii	29
	f	Prid.	30

Iulius. [July]

Aur. num.	Lit. Dominic.		Dies mensis.
xix	g	Calend.	1
viii	A	vj	2
	b	v	3
xvi	c	iiij	4
v	d	iiij	5
	e	Prid.	6
xiii	f	Non.	7
ii	g	viii	8
	A	vii	9
x	b	vi	10
	c	v	11
xviii	d	iiii	12
vii	e	iii	13
	f	Prid.	14
xv	g	Idus.	15
iiii	A	xvii	16
	b	xvi	17
xii	c	xv	18
i	d	xiiii	19
	e	xiii	20
ix	f	xii	21
	g	xi	22
xvii	A	x	23
vi	b	ix	24
	c	viii	25
xiiii	d	vii	26
iii	e	vi	27
	f	v	28
xi	g	iiii	29
xix	A	iii	30

Aur. num.	Lit. Dominic.		Dies mensis.
	b	Prid.	31

Augustus. [August]

Aur. num.	Lit. Dominic.		Dies mensis.
viiij	c	Calend.	1
xvi	d	iiiij	2
v	e	iiij	3
	f	Prid.	4
xiiij	g	Non.	5
ij	A	viiij	6
	b	vij	7
x	c	vj	8
	d	v	9
xviiij	e	iiiij	10
vii	f	iiij	11
	g	Prid.	12
xv	A	Idus.	13
iiiij	b	xix	14
	c	xviiij	15
xii	d	xvij	16
j	e	xvj	17
	f	xv	18
ix	g	xiiiij	19
	A	xiiij	20
xvii	b	xij	21
vj	c	xj	22
	d	x	23
xiiiij	e	ix	24
iii[?]	f	viiij	25
	g	vij	26
xi	A	vj	27

Aur. num.	Lit. Dominic.		Dies mensis.
xix	b	v	28
	c	iiij	29
viiij	d	iiij	30
	e	Prid.	31

September. [September]

Aur. num.	Lit. Dominic.		Dies Mensis.
xvi	f	Calend.	1
v	g	iiii	2
	A	iii	3
xiii	b	Prid.	4
ii	c	Non.	5
	d	viii	6
x	e	vii	7
	f	vi	8
xviii	g	v	9
vii	A	iiii	10
	b	iii	11
xv	c	Prid.	12
iiii	d	Idus.	13
	e	xviii	14
xii	f	xvii	15
j	g	xvi	16
	A	xv	17
ix	b	xiiii	18
	c	xiii	19
xvii	d	xii	20
vi	e	xi	21
	f	x	22
xiii	g	ix	23
iii	A	viii	24

Aur. num.	Lit. Dominic.		Dies Mensis.
	b	vii	25
xi	c	vi	26
xix	d	v	27
	e	iiii	28
viii	f	iii	29
	g	Prid.	30

October.

Aur. num.	Lit. Dominic.		Dies Mensis.
xvi	A	Calend.	1
v	b	vi	2
xiii	c	v	3
ii	d	iiii	4
	e	iii	5
x	f	Prid.	6
	g	Non.	7
xviii	A	viii	8
vii	b	vii	9
	c	vi	10
xv	d	v	11
iiii	e	iiii	12
	f	iii	13
xii	g	Prid.	14
i	A	Idus.	15
	b	xvii	16
ix	c	xvi	17
	d	xv	18
xvii	e	xiiii	19
vi	f	xiii	20
	g	xii	21
xiii	A	xi	22

Aur. num.	Lit. Dominic.		Dies Mensis.
iii	b	x	23
	c	ix	24
xi	d	viii	25
xix	e	vii	26
	f	vj	27
viii	g	v	28
	A	iiii	29
xvi	b	iii	30
v	c	Prid.	31

Nouember.

Aur. num.	Lit. Dominic		Dies mensis.
	d	Calend.	1
xiii	e	iiij	2
ii	f	ijj	3
	g	Prid.	4
x	A	Non.	5
	b	viii	6
xviii	c	vii	7
vii	d	vi	8
	e	v	9
xv	f	iiii	10
iiii	g	iii	11
	A	Prid.	12
xii	b	Idus.	13
j	c	xviiij	14
	d	xvii	15
x	e	xvi	16
	f	xv	17
xvii	g	xiiii	18
vi	A	xiii	19

Aur. num.	Lit. Dominic		Dies mensis.
	b	xii	20
xiii	c	xi	21
iii	d	x	22
	e	ix	23
xi	f	viii	24
xix	g	vii	25
	A	vi	26
viii	b	v	27
	c	iiii	28
xvi	d	iii	29
v	e	Prid.	30

December.

Aur. num.	Lit. Dominic.		Dies mensis.
xij	f	Calend.	1
ij	g	iiij	2
	A	ij	3
x	b	Prid.	4
	c	Non.	5
xviiij	d	viiij	6
vii	e	vij	7
	f	vj	8
xv	g	v	9
iiij	A	iiij	10
	b	ij	11
xii	c	Prid.	12
j	d	Idus.	13
	e	xix	14
ix	f	xviii	15
	g	xvii	16
xvii	A	xvj	17

Aur. num.	Lit. Dominic.		Dies mensis.
vj	b	xv	18
	c	xiiij	19
xiii	d	xij	20
iii	e	xij	21
	f	xj	22
xi	g	x	23
xix	A	ix	24
	b	viiij	25
viiij	c	vij	26
	d	vj	27
xvi	e	v	28
v	f	iiij	29
	g	ij	30
xiii	A	Prid.	31

[p. 110 — printed 94]

[Margin: The first golden number of January is not formed by adding 8 to the last golden number of December.]

[Margin: The golden numbers written into the calendar do not follow the pattern of the cycle.]

In this calendar you can see for yourself that each golden number is set down twelve times — exactly as many times as there are lunations in a common lunar year — apart from those seven numbers which are repeated in a thirteenth position after 20 December, and which also occupy the first days of January. I want to warn you of this, so that you will not think the golden numbers are laid out in the calendar in the manner of a cycle: that is, that the golden number for the first day of January is formed from the last golden number of the year by adding 8 to the golden number above it, the one that stands last in December. For this generation of the succeeding golden numbers by adding 8 to the golden numbers above them stops entirely at the end of the year, and begins again at the start of the year from the same golden number it began from before, with no account taken of the golden number that stands last in the month of December — because the golden numbers written into the calendar cannot preserve the pattern of the cycle. Precisely the same thing can be seen in the calendar that

follows, where the golden numbers are so arranged that they indicate the new moons from the year of the restoration up to the year 1700, exactly as the epacts show those same new moons in the new calendar.

SEQVITVR CALENDARIVM ECCLESIASTICVM, QVO POST ANNI CORRECTIONEM A GREgorio XIII. factam Ecclesia vti deberet vsque ad annum 1700. si aurei numeri pro Epactis in eo descripti essent.

THERE FOLLOWS THE ECCLESIASTICAL CALENDAR WHICH, after the correction of the year made by Gregory XIII, the Church would have had to use up to the year 1700, if golden numbers had been written into it in place of epacts.

[p. 111 — printed 95]

Ianuarus.

Aur. num.	Lit. Dominic.		Dies mensis.
	A	Calend.	1
ix	b	iii j	2
	c	iii	3
xvii	d	Prid.	4
vi	e	Non.	5
	f	viii	6
xiii	g	vii	7
iii	A	vi	8
	b	v	9
xi	c	iiii	10
	d	iii	11
xix	e	Prid.	12
viii	f	Idus.	13
	g	xix	14
xvi	A	xviii	15
v	b	xvii	16

Aur. num.	Lit. Dominic.		Dies mensis.
	c	xvi	17
xiii	d	xv	18
ii	e	xiii	19
	f	xiii	20
x	g	xii	21
	A	xi	22
xviii	b	x	23
vii	c	ix	24
	d	viii	25
xv	e	vii	26
iiij	f	vi	27
	g	v	28
xii	A	iiii	29
j	b	iii	30
	c	Prid.	31

Februarius.

Aur. num.	Lit. Dominic.		Dies Mensis.
ix	d	Calend.	1
	e	iiij	2
xvij	f	iii	3
vj	g	Prid.	4
xiiij	A	Non.	5
iiij	b	viiij	6
	c	vij	7
xj	d	vj	8
	e	v	9
xix	f	iiij	10
viiij	g	iiij	11
	A	Prid.	12
xvj	b	Idus.	13

Aur. num.	Lit. Dominic.		Dies Mensis.
v	c	xvj	14
	d	xv	15
xiiij	e	xiiiij	16
ij	f	xiiij	17
	g	xij	18
x	A	xj	19
	b	x	20
xviiij	c	ix	21
vij	d	viiij	22
	e	vii	23
xv	f	vi	24
iiiij	g	v	25
	A	iiiij	26
xij	b	iiij	27
j	c	Prid.	28

Martius.

Aur. num.	Lit. Dominicales.		Dies Mensis.
	d	Calend.	1
ix	e	vj	2
	f	v	3
xviij	g	iiiij	4
vj	A	iii	5
	b	Prid.	6
xiiiij	c	Non.	7
iiij	d	viiij	8
	e	vij	9
xj	f	vj	10
	g	v	11
xix	A	iiiij	12
viiij	b	iiij	13

Aur. num.	Lit. Dominicales.		Dies Mensis.
	c	Prid.	14
xvj	d	Idib.	15
v	e	xvij	16
	f	xvj	17
xiiij	g	xv	18
ij	A	xiiiij	19
	b	xiiij	20
x	c	xij	21
	d	xj	22
xviiij	e	x	23
vij	f	ix	24
	g	viiij	25
xv	A	vij	26
iiiij	b	vj	27
	c	v	28
xij	d	iiiij	29
j	e	iiij	30
	f	Prid.	31

Aprilis. [April]

Aur. num.	Lit. Dominic.		Dies Mensis.
ix	g	Calend.	1
	A	iiiij	2
xvij	b	iii	3
vj	c	Prid.	4
xiiiij	d	Non.	5
iiij	e	viiij	6
	f	vij	7
xj	g	vj	8
	A	v	9
xix	b	iiiij	10

Aur. num.	Lit. Dominic.		Dies Mensis.
viiij	c	iiij	11
	d	Prid.	12
xvj	e	Idus.	13
v	f	xviiij	14
	g	xviij	15
xiiij	A	xvj	16
ij	b	xv	17
	c	xiiiij	18
x	d	xiiij	19
	e	xij	20
xviiij	f	xj	21
vij	g	x	22
	A	ix	23
xv	b	viiij	24
iiiij	c	vii	25
	d	vi	26
xij	e	v	27
j	f	iiiij	28
	g	iiij	29
ix	A	Prid.	30

[30 day-rows counted against the month length.]

Maius. [May]

Aur. num.	Lit. Dominicales.		Dies Mensis.
	b	Calend.	1
xvij	c	vj	2
vj	d	v	3
	e	iiiij	4
xiiiij	f	iii	5
iiij	g	Prid.	6
	A	Non.	7

Aur. num.	Lit. Dominicales.		Dies Mensis.
xj	b	viiij	8
	c	vij	9
xix	d	vj	10
viiij	e	v	11
	f	iiij	12
xvj	g	iiij	13
v	A	Prid.	14
	b	Idib.	15
xiiij	c	xviij	16
ij	d	xvj	17
	e	xv	18
x	f	xiiiij	19
	g	xiiij	20
xviiij	A	xij	21
vij	b	xj	22
	c	x	23
xv	d	ix	24
iiij	e	viiij	25
	f	vij	26
xij	g	vj	27
j	A	v	28
	b	iiij	29
ix	c	iiij	30
	d	Prid.	31

[31 day-rows counted against the month length.]

Iunius. [June]

Aur. num.	Lit. Dominic.		Dies mensis.
xvii	e	Calend.	1
vi	f	iiij	2
xiiiij	g	iii	3

Aur. num.	Lit. Dominic.		Dies mensis.
iii	A	Prid.	4
	b	Non.	5
xi	c	viii	6
	d	vii	7
xix	e	vi	8
viii	f	v	9
	g	iiii	10
xvi	A	iii	11
v	b	Prid.	12
	c	Idus.	13
xiii	d	xviii	14
ii	e	xvii	15
	f	xvi	16
x	g	xv	17
	A	xiiii	18
xviii	b	xiii	19
vii	c	xii	20
	d	xi	21
xv	e	x	22
iiij	f	ix	23
	g	viii	24
xii	A	vii	25
j	b	vi	26
	c	v	27
ix	d	iiii	28
	e	iii	29
xvij	f	Prid.	30

[30 day-rows counted against the month length.]

Iulius. [July]

Aur. num.	Lit. Dominic.	Dies Mensis.	
vi	g	Calen.	1
	A	vi	2
xiii	b	v	3
iii	c	iiii	4
	d	iii	5
xi	e	P. id.	6
	f	Non.	7
xix	g	viii	8
viii	A	vii	9
	b	vi	10
xvi	c	v	11
v	d	iiii	22
	e	iii	13
xiii	f	Prid.	14
ii	g	Idus.	15
	A	xvii	16
x	b	xvi	17
	c	xv	18
xviii	d	xiiii	19
vii	e	xiii	20
	f	xii	21
xv	g	xi	22
iiii	A	x	23
	b	ix	24
xii	c	viii	25
i	d	vii	26
	e	vi	27
ix	f	v	28
	g	iiii	29
xvii	A	iii	30

Aur. num.	Lit. Dominic.		Dies Mensis.
vi	b	Prid.	31

[31 day-rows counted against the month length.]

Augustus. [August]

Aur. num.	Lit. Dominic.		Dies Mensis.
xiii	c	Calend.	1
iii	d	iiii	2
	e	iii	3
xi	f	Prid.	4
	g	Non.	5
xix	A	viii	6
viii	b	vii	7
	c	vi	8
xvi	d	v	9
v	e	iiii	10
	f	iii	11
xiii	g	Prid.	12
ii	A	Idib.	13
	b	xix	14
x	c	xviii	15
	d	xvii	16
xviii	e	xvi	17
vii	f	xv	18
	g	xiiii	19
xv	A	xiii	20
iiii	b	xii	21
	c	xi	22
xii	d	x	23
i	e	ix	24
	f	viii	25
ix	g	vii	26

Aur. num.	Lit. Dominic.		Dies Mensis.
	A	vi	27
xvii	b	v	28
vi	c	iiii	29
	d	iii	30
xiii	e	Prid.	31

[31 day-rows counted against the month length.]

September [September]

Aur. num.	Lit. Dominic.		Dies Mensis.
iii	f	Calend.	1
	g	iiii	2
xi	A	iii	3
	b	Prid.	4
xix	c	Non.	5
viii	d	viii	6
	e	vii	7
xvi	f	vi	8
v	g	v	9
	A	iiii	10
xiii	b	iii	11
ii	c	Prid.	12
	d	Idus.	13
x	e	xviii	14
	f	xvii	15
xviii	g	xvi	16
vii	A	xv	17
	b	xiiii	18
xv	c	xiii	19
iiii	d	xii	20
	e	xi	21
xii	f	x	22

Aur. num.	Lit. Dominic.		Dies Mensis.
i	g	ix	23
	A	viii	24
ix	b	vii	25
	c	vi	26
xvii	d	v	27
vi	e	iiii [?]	28
xiii	f	iii	29
iii	g	Prid.	30

[30 day-rows counted against the month length.]

October. [October]

Aur. num.	Lit. Dominic.		Dies Mensis.
	A	Calen.	1
xi	b	vi	2
	c	v	3
xix	d	iiii	4
viii	e	iii	5
	f	Prid.	6
xvi	g	Non.	7
v	A	viii	8
	b	vii	9
xiii	c	vi	10
ii	d	v	11
	e	iiii	22
x	f	iii	13
	g	Prid.	14
xviii	A	Idus.	15
vii	b	xvii	16
	c	xvi	17
xv	d	xv	18
iiii	e	xiiii	19

Aur. num.	Lit. Dominic.		Dies Mensis.
	f	xiii	20
xii	g	xii	21
i	A	xi	22
	b	x	23
ix	c	ix	24
	d	viii	25
xvii	e	vii	26
vi	f	vi	27
	g	v	28
xiii	A	iiii	29
iii	b	iii	30
	c	Prid.	31

[31 day-rows counted against the month length.]

Nouember. [November]

Aur. num.	Lit. Dominic.		Dies Mensis.
xi	d	Calend.	1
	e	iiii	2
xix	f	iii	3
viii	g	Prid.	4
	A	Non.	5
xvi	b	viii	6
v	c	vii	7
	d	vi	8
xiii	e	v	9
ii	f	iiii	10
	g	iii	11
x	A	Prid.	12
	b	Idib.	13
xviii	c	xviii	14
vii	d	xvii	15

Aur. num.	Lit. Dominic.		Dies Mensis.
	e	xvi	16
xv	f	xv	17
iiii	g	xiii	18
	A	xiii	19
xii	b	xii	20
i	c	xi	21
	d	x	22
ix	e	ix	23
	f	viii	24
xvii	g	vii	25
vi	A	vi	26
xiii	b	v	27
iii	c	iiii	28
	d	iii	29
xi	e	Prid.	30

[30 day-rows counted against the month length.]

December. [December]

Aur. num.	Lit. Dominic.		Dies Mensis.
	f	Calend.	1
xix	g	iiii	2
viii	A	iii	3
	b	Prid.	4
xvi	c	Non.	5
v	d	viii	6
	e	vii	7
xiii	f	vi	8
ii	g	v	9
	A	iiii	10
x	b	iii	11
	c	Prid.	12

Aur. num.	Lit. Dominic.		Dies Mensis.
xviii	d	Idus.	13
vii	e	xix	14
	f	xviii	15
xv	g	xvii	16
iiii	A	xvi	17
	b	xv	18
xii	c	xiii	19
i	d	xiii	20
	e	xii	21
ix	f	xi	22
	g	x	23
xvii	A	ix	24
vi	b	viii	25
xiii	c	vii	26
	d	vi	27
iii	e	v	28
	f	iiii	29
xi	g	iii	30
xix	A	Prid.	31

[31 day-rows counted against the month length.]

7 THE REASON why the following golden number is formed from the preceding one by adding 8 or subtracting 11, and likewise the preceding one from the one that follows by adding 11 or subtracting 8; and why the golden numbers are not written in the Calendar in an unbroken series, but nearly always with single empty days left between each pair — that reason is this. Eight solar years, assigning 365 days 6 hours to each, comprise 2922 days, and in that span very nearly 99 lunations occur. The last lunation alone falls short by 1 day 12 hours 41 minutes 15 seconds 9 thirds, since 99 lunations according to the Moon's mean motion require 2923 days 12 hours 41 minutes 15 seconds 9 thirds. The lunations after eight elapsed years therefore do not begin on the same days on which the new moons occurred eight years before, but a day and a half later. This is why, after any given golden number, a golden number eight units greater is written in the Calendar: to signify that after eight years the new moons do not fall on the

days to which the preceding golden number is assigned, but on those before which the following golden number, formed from the preceding one by the addition of 8, is set. And since, if the following golden number came immediately after the preceding one, the lunation of the following golden number would be anticipated by 12 hours and more, the next golden number after that must be written not immediately after the first, but with one empty day left between, so that its lunation is not anticipated by a whole day and more. Thus this golden number, the third from the first — from which it is formed by adding 16 — is written in the third place after it, just as its lunation likewise begins about three days later than the lunation of that first number. This is the reason why the following golden number is composed by adding 8 to the preceding one; why they are set down two at a time; and why single empty days are left between each pair — apart from a few golden numbers which interrupt that order because of the lunar equation, which is necessary.

[Margin: Why the following golden number is formed from the preceding one by adding 8 or subtracting 11; and the preceding one from the one that follows by adding 11 or subtracting 8. And why the golden numbers are not written in the Calendar in an unbroken series.]

8 AS FOR why a smaller golden number should follow immediately upon a larger one, rather than a larger upon a smaller — a thing that could equally well have been done — this seems to have come about by a kind of accident. For since the Moon on any given day of the year is 11 days older than on the same day of the year before, on account of those 11 days by which the solar year exceeds the lunar, it follows that any golden number in the Calendar is preceded by the golden number of the following year by 11 days: that is, the Moon is reckoned new 11 days earlier than in the preceding year. Hence it came about that the smaller golden number was generally written immediately beneath the larger, while the larger was not immediately beneath the smaller — which seems attributable rather to that arrangement of the golden number and to some chance circumstance than to any fixed reason compelling the smaller to be written immediately beneath the larger rather than the larger beneath the smaller, since the reckoning of the lunations would hold good either way. So much, then, for the reason why the following golden number is formed from the preceding one by adding 8, and why the golden numbers do not keep an unbroken order.

9 LET US NOW also explain the reason why the preceding golden number is formed from the one that follows by adding 11. It is this. Eleven solar years

contain 4017 days and 18 hours, in which 136 lunations are completed, with 1 day 14 hours 8 minutes 47 seconds 4 thirds left over; for 136 lunations require only 4016 days 3 hours 51 minutes 12 seconds 56 thirds. The new moons after 11 completed years therefore do not fall on the same days on which they occurred 11 years earlier, but very nearly a day and a half earlier. This is why, before any given golden number, a golden number eleven units greater is placed in the Calendar: to signify that after 11 years the new moons do not fall on the same days on which they occurred 11 years before, but begin earlier — namely on those days before which the preceding golden number, formed from the following one by adding 11, is written. From this it follows that Campanus and some others were wrong to set these two golden numbers, 13 and 2, against 2 December. For if, after 11 years, with golden number 2 current, the new moon falls on 2 December, that same new moon must necessarily occur about a day and a half earlier, as has been said. Since, then, it is now established that any following golden number is eight units greater than the preceding one, and that any preceding number is eleven units greater than the one that follows, it plainly follows that the following number can be formed from the preceding one either by adding 8 or by subtracting 11, and the preceding one from the one that follows either by adding 11 or by subtracting 8. This is why the ancient writers divided the nineteen-year cycle — which they called ἐννεαδεκαετηρίδα[?] [Greek: "nineteen-year period"; the reading of the middle of the word is uncertain, and the standard form is ἐννεακαιδεκαετηρίς] — into an ὀγδόαδα [Greek: "octad," a group of eight] and an ἐνδέκαδα [Greek: "hendecad," a group of eleven], seeing that its whole progression and order in the Calendar is constituted by adding or subtracting 8 or 11, as we have set out. The ὀγδόας [octad], together with the 11 days by which the solar year exceeds the lunar, makes up the whole nineteen-year cycle, while the ἐνδεκάς [hendecad], together with the nineteen-year cycle, completes a full lunation of 30 days.

10 ONCE the 19 golden numbers had been disposed in the Calendar by the technique we have described, it was not hard to find the time of the new moon in any month — that is, the day on which the Moon was to be called "first." For the Moon was declared new, or the new moon was said to occur, on the day before which the golden number current in the proposed year stood; and from this the Paschal fourteenth Moon was found, and from that Easter with the other movable feasts.

[Margin: How the new moons are found from the golden numbers disposed in the Calendar.]

11 ALL THIS which we have transmitted concerning the arrangement and use of the golden number was devised by the ancients with great subtlety and great ingenuity; but more accurate astronomical observation has found it not to be true in every respect. For the new moons, when 19 solar years have run out, do not return to exactly the same places, but a little earlier, so that in each span of 19 years they anticipate their former places by 1 hour 27 minutes 31 seconds 55 thirds; in the span of four nineteen-year cycles, that is 76 years, by 5 hours 50 minutes 7 seconds 40 thirds; and finally, in 312½ years, by almost a whole day, as was shown in the preceding chapter. Consequently, from the time of the Council of Nicaea down to our own age they have moved forward towards the beginnings of the months by four days and more. Hence it came about that, in order to find the new moons by the golden numbers of the Council of Nicaea (golden number 3 being of course placed at the beginning of January), one had, before the correction of the Calendar, to count upward from the place of the golden number current in the proposed year as far as the fifth day inclusive. Some indeed used to do this by these five syllables: IN COELIS EST HIC; or by these, HIC NOVA LVNA; or by these, IN COELO LVNA.

[Margin: By how much the new moons had anticipated from the time of the Council of Nicaea down to the year of the correction.]

[Margin: How the golden numbers in the old Calendar would have had to be altered, so that they might indicate the new moons both before the correction and after it.]

12 AND SO, if the golden numbers were to indicate the new moons correctly before the correction, they would all have had to be advanced by five days, three empty days being left between the old places and the new, so that golden number 19, which before the correction occupied 5 January, would have had to be assigned to the first day, and so with the rest — keeping nevertheless to the rule that the lunations be made alternately of 30 and 29 days, as was done before the emendation of the Calendar in the Breviaries and Missals corrected by Pius V. In this way the golden numbers so disposed would have correctly indicated the new moons for the years immediately preceding the restoration. But once the golden numbers had been advanced

in this way towards the beginnings of the months, if they had had to be retained in the Calendar after the correction — that is, after the removal of the 10 days — they would have had to be moved back again towards the ends of the months by ten days, so that 9 days would be left empty between the golden numbers advanced before the correction of the year and the same numbers set back after

the correction, the same alternating lunations of 30 and 29 days being preserved. By this method the golden numbers would, after the restoration of the year, have correctly shown the new moons according to the mean motion. In the preceding Calendar, however, we have for the most part pushed those same golden numbers down eleven days from the places into which they would have been advanced by the syllables *In coelis est hic*; for since the golden numbers indicated the new moons too early in the time of the Council of Nicaea, as we shall say in chapter 11, number 5, and since, when advanced in that way, they would have shown the same thing in the same manner, they had to be pushed back by 11 days, so as to give the new moons in the way the practice of the Church makes more correct, that is, later. This has not, however, been observed everywhere, on account of the alternating lunations of 30 and 29 days.

[Margin: That the golden numbers corrected in the Calendar cannot show the new moons perpetually, or even for long; and why.]

13 BUT the golden numbers thus corrected and restored to their proper places, although they would indicate the new moons correctly for a while, could not do so perpetually or for a long time, for two reasons. First, because whenever the intercalary day is taken away from some centesimal year — that is, whenever some centesimal year is made a common year, so that the equinox may not recede from 21 March, as was said above — all the new moons would occur one day later than they would be indicated by the golden numbers. Hence, as often as a common year is made out of a centesimal year which by its own nature is bissextile, so often would all the golden numbers have to be moved down by one day in order to show the new moons correctly. Secondly, because, as we showed in the preceding chapter, number 4, the new moons in $312\frac{1}{2}$ years anticipate their places in the Calendar by one day; whence it follows that after every $312\frac{1}{2}$ years the golden numbers would have to be advanced one day towards the beginnings of the months in order to indicate the new moons — provided that the intercalary day were not then to be omitted. But by what rule this advancing of the golden numbers by one day downward is to be corrected, when some centesimal year is made common, we shall teach in chapter 12, number 10.

[Margin: If the golden number had to be retained in the Calendar, 30 Calendars would have to be made.]

14 AND ON THIS PRINCIPLE 30 Calendars would have to be made, so that the arrangement of the golden numbers would have 30 varieties, each one being moved up and down through 30 days — as many, that is, as are contained in one lunation of 30 days, as will be clear from chapter 15. But since this would be

extremely inconvenient and troublesome, it was very wisely decided that the golden numbers should be removed from the Calendar and other numbers put in their place, which would show the new moons perpetually in a single Calendar, whether the new moons move forward towards the beginnings of the months or slip back towards their ends, with no change made in the Calendar — as we shall say in the next chapter.

THESE numbers are the 30 epacts, from i to xxx, or to *. The last epact, xxx, is marked with this sign * rather than with the number xxx, because, if we wish to speak properly, no epact can be xxx, since every epact must be less than the time of a whole lunation. For the epacts are the numbers of days that remain over in December after the last lunation of the year. Thus, if the last lunation of the year ends on the last day of December, so that no day remains over, the epact of the following year will be 0; if it ends on the second to last, that is on the 30th day, the epact will be i, because of the one day remaining; if on the third to last, that is on the 29th day, the epact will be ii; and so with the rest, until we come to the lunation that ends on the Kalends of December, so that 30 days remain over. For then that lunation is not the last but the second to last, since those 30 surplus days constitute the last lunation, and so the epact will then be 0 or xxx, which we express by the sign *. And this is the reason why there can be 30 epacts in all, from i to xxx or 0 or *, on account of the days 1, 2, 3, and so on up to 30 or 0, which can remain over after the lunation that ends in the month of December. And although, when some lunation ends on the first day of December or on the last, the epact of the following year is xxx or 0, that epact xxx or 0 must nevertheless be marked with some sign, namely with this *, so that by it the new moons of the following year may be investigated, and so that it may be understood that two lunations were then completed in December — one on the last day, so that no day remained over, and the other on the first day, so that after it 30 days were left. But it sometimes happens that the epact of some year is one unit greater than the number of days remaining after the last lunation of the preceding year. When this occurs will be stated in chapter 12, number 14, where we shall treat of finding the epact of any given year.

[Margin: Why every epact must be less than 30.]

[Margin: What the epacts are, and why they are 30.]

THIS same number of 30 epacts is likewise gathered from the 11 days by which, as we have said, the lunar year is exceeded by the solar. For if in the first year 11 days remain over, in the second there will be 22, and in the third 33; and casting out 30, which make one lunation, the remainder gives epact iii. And so on in turn,

always adding 11 and casting out 30 if the sum is greater than 30, all 30 epacts will be made up, so that the first is xi and the last xxx or 0 or *, after which xi is again generated by the addition of 11, as appears here.

xi	xxii	iii	xiiii	xxv	vi	xvii	xxviii	ix	xx	i
xii	xxiii	iiii	xv	xxvi	vii	xviii	xxix	x	xx	ii
										i
xiii	xxiiii	v	xvi	xxvii	viii	xix	xxx	vel 0.	vel	*

IT SOMETIMES HAPPENS that 12, not 11, must be added to the preceding epact in order to form the following epact. When this occurs will be stated below in chapter 12, numbers 12 and 13, in which chapter we shall teach how to find the epact of any year whatever.

THESE 30 numbers are called *epacts*, from a Greek word which in Latin means the same as "added days," or "supplementary" or "inserted" days. For they are joined on at the end of the last lunar month to fill out the number of days of the solar year, and to begin the first lunation of the following year. In what way epacts of this kind, once placed in the Calendar, can indicate the new moons perpetually with no change made in the Calendar will be clear from what follows; but in the first place we must show by what technique and care they are disposed through the days of the Calendar.

CAPVT X.

Quo Artificio Epactæ in Calendario describantur. [By what technique the epacts are set out in the Calendar.]

ALTHOUGH the epacts could be written in the Calendar in the natural order of the numbers, from 1 up to xxx or to *, as I shall show a little further on (for there is no lack of people who deny that this can be done), it nevertheless seemed more expedient that they be written in retrograde order, starting from xxx or *, proceeding through xxix, xxviii, and so on down to 1 — both so that they may be distinguished from the number of the days of the same Calendar, and so that they may show the new moons more naturally, as will be clear from what follows. Beginning, then, from epact * at the start of January, epact xxix is written against the second day, xxviii against the third, and so on in turn in retrograde order until 1 is reached, which epact is set before 30 January; after which all thirty epacts are repeated in the same order to the end of the Calendar, so that they are

all inscribed in the Calendar only twelve times — except for these eleven, *, xxix, xxviii, xxvii, xxvi, xxv, xxiiii, xxiii, xxii, xxi, xx, which are repeated a thirteenth time on the last eleven days of December. Epact 19 is also excepted, being marked with a different character or colour; for it too is attached to the last day, alongside epact xx, as we shall say below.

[Margin: Why the epacts have been disposed in the Calendar in retrograde order.]

2 BUT in order that the epacts may indicate the new moons correctly, this precaution must be observed in setting them out. In the second placement of the thirty epacts (that is, once all 30 have been written down a first time), and likewise in the fourth, sixth, eighth, tenth and twelfth, the two epacts xxv and xxiiii must be written together against the same day — namely 5 February, 5 April, 3 June, 1 August [printed *Agusti*], 29 September and 27 November, the days on which epact xxv falls according to the arrangement set out above. The effect of this is that after the twelfth inscription of the epacts, 11 days are left over in December; against these are again set the epacts *, xxix, xxviii, xxvii, xxvi, xxv, xxiiii, xxiii, [xxii, xxi ?] xx, which are of course the ones assigned to the first 11 days of January. All 30 epacts, inscribed twelve times, thus occupy only 354 days, the number we have said is contained in a common lunar year — with the result that the epacts in the Calendar cannot preserve the reckoning of the cycle in such a way that the epact of the first day of January is the next smaller than the one assigned to the last day of December, which of course precedes the first day of January; rather their retrograde order ceases at the end of the year and begins again at the beginning of the year from epact *, as before.

[Margin: That the epacts disposed in the Calendar do not preserve the reckoning of the cycle.]

3 NOW if two epacts were not attached to the same day in six places of the Calendar, but each followed the next singly in retrograde order right to the end of the year, all 12 lunations of every epact would be of 30 days, and all the epacts, repeated twelve times, would occupy 360 days — a number that exceeds the common lunar year by six days, which is absurd and contrary to the nature and condition of the lunations. Therefore, in order that the lunations may be alternately of 30 and 29 days, it is necessary to place two epacts together in six places. For in this way it will come about that the lunations are constituted alternately of 30 and 29 days. For when epact xxiiii, together with the others that follow it, has risen in February, for example, one day above its natural place towards the beginning of the month, on account of the two epacts xxv and xxiiii

assigned to the same fifth day, the result is that the lunations which begin from the 30 epacts preceding epact *xxiiii* — the one written against the same day as epact *xxv* — namely from the epacts *xxv*, *xxvi*, *xxvii*, *xxviii*, *xxix*, ***, *i*, and from the rest of the month of January up to epact *xxiiii* inclusive, contain only 29 days. And we mean the same to be said of the lunations of those same 30 epacts which in the other five places of the Calendar precede epact *xxiiii*, written against the same day as epact *xxv*.

[Margin: Why in six places of the Calendar two epacts are written against the same day.]

[Margin: That the lunations are made alternately of 30 and 29 days because two epacts are attached to the same day in six places of the Calendar.]

4 NEXT, since it sometimes happens that within one and the same nineteen-year cycle both of these epacts, *xxv* and *xxiiii*, are in use, as will appear below, epact 25 will have to be written in a different character or colour, next to epact *xxvi*, in those six places in which the epacts *xxv* and *xxiiii* are placed together. In the other places, however, this same epact 25 must be written next to epact *xxv*, again in a different character or colour. For unless this is done, it will happen that in one and the same nineteen-year cycle, in which both epact *xxv* and epact *xxiiii* are in use, two lunations will six times in the year fall on one and the same day, and two golden numbers will be assigned to the same day — namely those which, in the expanded table of which we shall speak in the next chapter, stand above those two epacts. That is absurd, and contrary to the principle of the nineteen-year cycle, since the new moons, as we showed above, cannot return to the same days except after 19 years have elapsed.

[Margin: Why epact 25 must be written in a different character or colour above the other epact *xxv* in six places of the Calendar.]

5 THIS drawback is entirely avoided by means of epact *xxv/25* written twice in six places of the Calendar, in different characters or colours, against different days. For whenever, in some nineteen-year cycle, epact *xxv* runs together with a golden number greater than 11 — such as are the last eight golden numbers, 12, 13, 14, 15, 16, 17, 18, 19 — epact *xxiiii* will indeed be in use in that same cycle as well; but if in that case the epact 25 is taken which is marked with a different character or colour, and which in those six places is placed opposite epact *xxvi*, then two golden numbers, or two new moons, cannot fall on the same day, since epact 25 marked with that different character or colour, and epact *xxiiii*, always occupy two different days in each month. When, however, in some nineteen-year

cycle epact xxv runs together with a golden number not greater than 11 — such as are the first eleven golden numbers, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 — it will never happen that epact xxiiii is in use together with xxv in the same cycle. Therefore the epact xxv is then to be taken which, in those six places, is written against the same day as epact xxiiii; for since epact xxiiii is not then in use in that cycle, there can be no danger of a new moon falling twice on the same day within the same nineteen-year cycle. In the same way, even if epact 25, marked with a different colour or character, is placed in six different positions opposite epact xxvi against the same day, two new moons will nevertheless not fall on that same day before 19 years have passed; because while epact xxv runs together with a golden number greater than 11 (the only time at which that epact 25 of a different colour or character is used, as we have said), epact xxvi will never be employed in the same cycle to indicate the new moons. And all this

[Margin: That because epact 25 is written in a different colour or character, two new moons cannot fall on the same day in the same nineteen-year cycle.]

the expanded table of epacts [tabula expansa Epactarum], which I shall treat in chapter 11. There, in the eight lines prefixed with the capital letters N, E, B and the small letters r, n, k, e, b (each line of that table, as will be understood later, presents a single nineteen-year cycle), you will find epact 25, marked with a different character or colour, under these eight larger golden numbers 12.13.14.15.16.17.18.19; whereas you will find epact xxiiii under these eleven smaller ones, 1.2.3.4.5.6.7.8.9.10.11 — but never epact xxvi. In the other 22 lines, by contrast, where epact xxv is written under the smaller eleven golden numbers, you will indeed sometimes find epact xxvi as well; yet you will never see epact xxiii [?: three minims are printed; the argument requires xxiiii] occurring alongside it at the same time. Therefore, if one takes now the epact xxv that is placed opposite epact xxiiii, and now the epact 25 of the other character or colour, which is placed opposite epact xxvi (due account being taken, of course, of the smaller or larger golden number with which it runs, as I said a moment ago), it becomes altogether impossible for two new moons to fall together on one and the same day within the same nineteen-year cycle — even though in the six places enumerated above the epacts xxv and xxiiii are set opposite the same day, and epact 25 of the other colour or character is likewise assigned to that same day together with epact xxvi.

[Margin: Why in the same cycle epact xxiiii is not used, when epact xxv and a golden number not greater than 12 run together. Likewise why epact xxvi is not

in use in the same cycle, when epact 25 and a golden number greater than 11 run together.]

6 THAT epact xxiiii cannot be in use when epact xxv runs with some golden number smaller than 12, or not greater than 11, but only when it runs with a golden number greater than 11; and likewise that epact xxvi is not employed when epact 25 of a different colour or character runs together with a golden number greater than 11 — all this is also gathered very clearly from the arrangement of the golden numbers and of the epacts in the Calendar. For since, as I said above, a larger golden number follows a smaller one in the Calendar not immediately but with one day left between, it follows that if in January, say, opposite the 6th day, where epact xxv is placed, any golden number smaller than 12 is written, and epact xxv is supposed to run together with it, then the next larger golden number must be written against 8 January, leaving the 7th vacant — so that in that nineteen-year cycle no new moon can fall on the 7th. Hence in that same cycle epact xxiiii, which is placed immediately below xxv, cannot possibly be in use; otherwise a new moon would fall on 7 January. Again, since in the Calendar a smaller golden number follows immediately upon a larger one, as was said above, it follows that if opposite that same 6 January, to which epact xxv is prefixed, any golden number greater than 11 is written, and epact 25 is supposed to run with it, then the following golden number must be placed at 7 January, immediately after that larger one, so that in that cycle a new moon can fall on the 7th. Therefore in the same cycle epact xxiiii, placed immediately below 25, will indicate a new moon and will accordingly be in use. But since a smaller golden number precedes a larger one not immediately but with one day left vacant, it follows that the golden number preceding that larger one, with which epact 25 is supposed to run, must be placed at the 4th day, so that on the 5th no new moon then occurs. For that reason epact xxvi, assigned to the 5th day, can in no way be in use at that time, lest a new moon in that cycle fall on 5 January.

[Margin: That epact 25 of a different colour or character, placed opposite epact xxvi, does not disturb the lunations.]

7 Moreover, this anticipation of epact 25 of the other colour or character, in those six places of the Calendar, is so far from disturbing the lunations that it rather restores them to their correct order. For since every lunation that ends on one of the first 30 days of January is the first lunation of the whole year, as I shall say later, it comes about that, while that epact 25 is running, the first lunation of the year, ending on 5 January, is made 30 days long; the second, ending on 3 February, only 29 (though it too would be 30 days if the epact xxv below epact

xxvi were taken); the third then becomes 30 days again, and the fourth 29, and so on, as the order of alternating lunations of 30 and 29 days requires. The thirteenth and extraordinary lunation of that year (for when epact 25 is in use the lunar year is embolismic, as will be said later) likewise becomes 30 days, whereas while epact xxv was running — the one assigned to the same day as xxiii — it would be only 29. Finally, there are just as many lunations of 30 days while epact 25 of the different colour is running as are found when the other epact xxv is in use; for there are 7 in the one case as in the other, although they proceed differently in the one case and in the other. Add to this that the Paschal lunation investigated by means of epact 25 of the different colour or character corresponds for the most part more exactly to the mean motion of the Moon. This will become plain if the lunations indicated by golden numbers greater than 11 are carefully compared with the calculation of the Moon's mean motion. For we shall generally find that those shown by golden numbers greater than 11 come out a little later than the Moon's mean motion requires. Therefore, since the Paschal lunation beginning on 4 April — the one shown by epact 25, marked with a character or colour different from the rest, which, as I said above, always runs with some golden number greater than 11 — begins one day earlier than it would if it were indicated by epact xxv assigned to 5 April, it plainly follows that the Paschal lunation which that earlier epact 25 begins agrees better with the Moon's mean motion than the one indicated by epact xxv placed at 5 April, running with the same larger golden number with which the former runs; for the latter begins one day later. But suppose someone objects: then the other epacts running with golden numbers greater than 11 which have not been anticipated — such as xxvi, xxvii, xxviii and so on — will make the Paschal lunations begin later than the mean motion requires. The answer is that this is generally true, but that it is to be put down to the nature of the cycle (for no cycle can avoid every disadvantage, as I shall say later); and that it is better to correct at least one lunation — namely the one that the anticipated epact 25 shows — than to leave them all uncorrected. Nor indeed does any error in the solemnity of Easter arise from this postponement of the lunations, except very rarely, as will appear later from the calculation of a great many years.

[Margin: Why the equation of the lunar months was made through the epacts xxv, xxiii *[so printed; the body text has xxiiii]* set together rather than through others.]

8 BUT someone may ask why, in the equation of the lunar months — that is, in the placing of two epacts against one and the same day in six places of the Calendar, so that the lunations may be constituted alternately of 30 and 29 days

— these two, xxv and xxiii, were adopted (set opposite 5 February; 5 April; 3 July; 1 August; 29 September; and 27 November) rather than two others, since it could equally well have been done with any two epacts whatever, and especially with the epacts * and xxix, which are placed at the end of January and the beginning of February — so that this equation would have been established, that is, after the completion of the first lunar month of 30 days, as we read was done by Julius Caesar in the cycle of the golden number, as Paul of Middelburg testifies in book 2 of the *Paulina*, where he sets out the Roman Calendar with Julius Caesar's lunar cycle, in which we see the equation applied at the end of January and of March, at the golden numbers 1 and 9. And the same was done by Luigi Lilio, the first author of this new Calendar, as is clear from the *Compendium* of the new plan for restoring the Calendar, sent in the year 1577 by Gregory xiii to the Christian princes, which I placed at the beginning of this work. For there the equation of the Moon is made on the last day of January, the last of March, 29 May, and so forth — on which days these two epacts ☉ [*the Compendium's circular epact-mark, distinct from the asterisk * used in the new Calendar*] and xxix are written together, of which ☉ signifies epact xxx, or 0

— or 0 (just as, in the new Calendar, epact * does); and above those same days, opposite epact j, is placed epact *, which in that *Compendium* signifies the same thing as ☉ and differs only in its figure. In just the same way, in the new Calendar epact 25, formed with a different character or colour, is written opposite epact xxvj, above the epacts xxv and xxiiij which are placed against the same day; and the upper epact 25 differs from the lower xxv only in figure or in colour. If, I say, someone asks this, let him know that these two epacts xxv and xxiiij were chosen for the equation of the Moon in preference to others because in this way the lunations reckoned by the cycle of 30 epacts — and especially (which is more to the point) the 30 Paschal lunations — are made to agree better with the lunations of the golden numbers of the Council of Nicaea, whose decrees and enactments we have retained in everything, so far as could be done and as was fitting. For we see that the equation of the Moon was made at practically the same places by the golden numbers of the old Calendar as it is made in the new Calendar by the epacts xxv and xxiiij.

[Margin: Why not all the Paschal lunations in the new Calendar are of 29 days, as in the old one.]

9 NEXT, just as in that cycle of the golden number all 19 Paschal lunations contain only 29 days, the first beginning on the eighth day of March and the last on 5 April, so too in the new cycle of the epacts (once the equation of the Moon has

been made through the epacts xxv, xxiiij) all 30 Paschal lunations are closed by the same limiting days — that is, 8 March and 5 April — and each contains 29 days, with the exception of the two lunations of the epacts 25 and xxiiij, when nevertheless 25 (which happens rarely) runs together with one of the last eight golden numbers, those greater than 11. For these two alone are of 30 days; which ought not to seem surprising. For since the Fathers of the Council of Nicaea assigned 29 days to the Paschal new moons — those counted from 8 March to 5 April — the 19 golden numbers could easily be arranged in them on the rule that each should make up a lunation of 29 days. But since there are 30 epacts, they cannot all be arranged in those same 29 days unless two of them are placed together on some one and the same day, as was done on 5 April. From which it follows that the lunation of epact xxiiij, and consequently also that of epact 25 placed above xxiiij, is made 30 days long.

[Margin: Why the equation of the epacts proposed in the Calendar of the *Compendium* was rejected, and another established in the new Calendar.]

10 NOW if the equation of the Moon were established at the end of March, as was indicated in the *Compendium* of the new plan for restoring the Calendar, seven Paschal lunations of 30 days would result, as is plainly evident in that Calendar. Therefore, in order that the Paschal new moons of the new Calendar might be confined within the same limits within which they were constrained from the Council of Nicaea down to the new Calendar, and that only two Paschal lunations should comprise 30 days, and that we should accordingly depart less from the ancient practice of the Church, we rejected the equation described in that *Compendium* and chose the one I have set out. For according to it all the new moons — and the Paschal ones especially — are found to have fallen at the time of the Council of Nicaea on exactly the same days on which the golden numbers of the old Calendar show them to have fallen; which by no means happens with the other equation of the *Compendium*. And this [recte: manifestum] will be evident to anyone who resolves into golden numbers the epacts both of the new Calendar and of the one described in that *Compendium*; how this is to be done I shall teach in chapter 15, no. 2. In the whole circuit of the year, out of the new moons of all the epacts (the Paschal ones excepted), only 12 are found to differ from the new moons indicated by the golden numbers at the time of the Council of Nicaea, if our epacts are resolved into the golden numbers of that period. On this matter I shall write more in its proper place [recte: suo loco], namely after I have set out the 30 Calendars of the golden numbers in chapter 15, the 30 tables of all the lunations in chapter 16, and the account of the embolisms in chapter 17.

[Margin: Why epact 19 is placed in the Calendar in another colour or character at the last day of December, opposite epact xx.]

11 IN addition, at the end of December, next to epact xx, epact 19 must also be placed, in a character or colour different from the others, to show the new moon on the last day of December when epact xix and golden number 19 run together. This will happen only once in many thousands of years — that is, once in the thirty nineteen-year cycles of the expanded table, when its eighth line, prefixed with the capital letter D, is in use, as is the case at present from the correction up to the year 1700 exclusive. For in that line alone is epact xix written under golden number 19. That epact 19, affixed to the last day of December, must at that period necessarily indicate a new moon (as happened in the year 1595, and will happen again in 1614, 1633, 1652, 1671, 1690, and thereafter will not occur again until after the year 8200) will become plain as follows. Since to an epact running with golden number 19 — whichever it may be — 12 must be added (whereas to the others only 11 is added) in order to form the epact of the following year, just as from the year 1400 up to the correction of the Calendar 12 was likewise always added to the last epact xxix, which always concurred with golden number 19, so that the first epact xi might be composed again — since the lunar cycle necessarily requires this, as I shall show below in chapter 12, nos. 12, 13 and 14 — it comes about that when epact xix runs with golden number 19, the epact of the following year is j, because adding 12 to 19 gives 31, and casting out 30 leaves j as the epact of the following year. Therefore, since the use of epact j begins in January, where it is assigned to the 30th day, then unless epact 19 were repeated at the end of December, so that a new moon might begin from it again before January (the December lunation then containing only 29 days), the lunation beginning on 2 December, where epact xix is written, would take in 59 days — as many, that is, as are counted from 2 December up to 29 January inclusive — because in December no other epact xix is found, apart from the one which I said must be assigned to the last day, from which a new moon could begin, nor in January any other epact j before the 30th day that could show the beginning of a new moon. The scheme of the lunations investigated by the nineteen-year cycle therefore necessarily requires either that epact 19 be repeated on the last day of December, so that the lunation of epact xix begun on 2 December contains only 29 days, and another begins on the last day from that same epact 19 and comprises 30 days — as many as are counted from the last day of December up to 29 January inclusive; or that epact j be assigned to the first day of January opposite epact *, so that the lunation of epact xix beginning on 2 December is made 30 days, and another, beginning on the first day of January from epact j, takes in only 29; or else that epact 1 be put back at the last day of December

opposite epact xx, in place of epact 19, so that the lunation beginning from it contains 30 days, while the preceding lunation, begun from epact xix assigned to 2 December, is made only 29. But since we began the distribution of the epacts in the Calendar from the first day of January, it does not seem fitting that right at the beginning of the lunations this equation should be made by two epacts, * and j, affixed to the same first day; and so that equation was thrown back onto the preceding day, that is, onto the end of December, where by the natural order epact j would have to be placed if the year did not begin from January — just as in the other months too epact j is set above *. But since epact j is also found next to 20 December,

it did not seem right to repeat it so soon at the end of December, especially since it does not immediately follow, in the retrograde order, the epact xx set at the end of December; and above all because the use of epact j first begins in the following year. I therefore judged that epact 19 should be written next to that xx, since these two epacts, xx and 19, follow one another in the correct order in the natural series of the epacts. Indeed, the calculation of the mean lunations confirms admirably that, when golden number 19 and epact xix concur, the new moon falls more correctly on the last day of December than on the first of January of the following year. This is plainly apparent in the years 1595, 1614, 1633, 1652, 1671, 1690, in all of which the golden number is 19 and the epact likewise xix. For the mean new moon in the year 1595 occurs on 30 December, 18 hours after midday; in the year 1614, on the 30th, nearly 11 hours after midday; in the year 1633, on the 30th, 3 hours after midday; in the year 1652, on the 29th, 20 hours after midday; in the year 1671, on the 30th, 12 hours after midday; and in the year 1690, on the 30th, 5 hours after midday.

[Margin: That because of epact 19 set at the last day of December opposite epact xx, two new moons cannot fall on the same day in the same nineteen-year cycle.]

NOR does it follow from this placing of epact 19 next to epact xx that two new moons fall on that same day within the space of 19 years. For in the cycle in which epact xix runs with golden number 19, epact xx is not in use, as is clear from the line of the expanded table which you will find in the next chapter, the one prefixed with the capital letter D. For in that line alone epact xix is indeed written under golden number 19, but epact xx is not found among the 19 epacts of that cycle.

AND this is the natural arrangement of the cycle of thirty epacts through the days of the months in the Calendar — and indeed the only one — showing the new moons and full moons, and the age of the Moon on any day at any time proposed;

although the new moons are sometimes forced to move upward in the Calendar on account of the equation of the Moon that must necessarily be applied, or on account of the intercalary day to be omitted in each space of four hundred years. For this cycle of the epacts, thus arranged in the Calendar, is perpetual, and can be adapted to any length of year whatever, provided that the due equation is applied at its proper times, as will be explained in chapters 11 and 12.

BUT I set out the new Calendar, with the epacts arranged through the days of the months in the manner I have explained, at the beginning of this work; there everyone will clearly see that only two Paschal lunations are of 30 days — namely those shown by epact 25 of a different character or colour and by epact xxiiij — whereas in the Calendar of the *Compendium*, which I also displayed at the beginning of this book, seven Paschal lunations contain 30 days, namely those indicated by the epacts *, xxix, xxviii, xxvij, xxvj, xxv and xxiiij.

[Margin: How the new moons of ecclesiastical use are investigated from the epacts arranged in the Calendar.]

12 NOW that all 30 epacts have been described, repeated over and over in the Calendar in the order I have set out — the order that appears in the Gregorian Calendar placed at the beginning of the book — the first day of the Moon, that is, the new moon of ecclesiastical use, will be declared to fall, in any proposed year and month, on those days to which the epact of that year is assigned; just as before the correction the new moon was said by the Church to occur, in any year and month, on those days to which the golden number of that year was attached.

[Margin: On what principle the epacts can indicate the new moons perpetually.]

AND these 30 epacts will indicate the new moons in perpetuity, with no alteration whatever made in them in the Calendar, even though on account of the omission of the intercalary day in the centesimal years the new moons run downward, that is, toward the end of the months; or move upward, that is, toward the beginnings of the months, after each period of $312\frac{1}{2}$ years. The golden numbers cannot do this unless they are arranged in the Calendar in various ways — that is, shifted now downward, now upward, as I said above. For whenever the new moons descend by one day toward the ends of the months, they will be indicated by the lower epact, the one next smaller than the higher. Thus if in some year the new moons are indicated, say, by epact xx, and it happens that the intercalary day is then omitted, after the omission of the day they will be indicated by epact xix, which is placed one day below epact xx in the Calendar. If on the other hand the new moons ascend by one day, they will be traced by the higher epact, the one

next greater than the lower. Thus if in some year the new moons are to be found by that same epact xx, and it happens that they have then moved upward by one day because $312\frac{1}{2}$ years have elapsed, they will have to be sought by epact xxi, which is written one day above epact xx in the Calendar. But when a smaller or a larger epact is to be taken for finding the new moons I shall set out fully below, when I show how the epact of any year is to be found, in chapter 12, no. 5 and following.

[Margin: That the epacts have rightly taken the place of the golden numbers, and are suitably arranged in retrograde order in the Calendar.]

13 THAT the 30 epacts have been substituted with excellent judgement for the golden numbers in the Calendar, and rightly distributed through the days of the whole year in retrograde order, anyone can easily recognize from this: that if all the days of the month of December which remain after the end of the lunation ending in that same month of any given year are carefully counted, that number of days not only gives, for the most part, the epact of the following year — that is, the very days by which the solar year exceeds the preceding lunar year, as was said above — but moreover the lunations of the whole following year begin on those days beside which is placed the epact of just as many units as there were days left over in December after the end of the lunation ending in that month; so that the superfluous days furnish the epact that points to the new moons of the following year.

[Margin: The days of December that remain after the last lunation of the year generally exhibit the epact of the following year.]

For example: if the end of some lunation in any year falls on 26 December — which happens while epact xxiiij is running (since a new lunation takes its start from the 27th, to which epact xxiiij is assigned) — 5 days of December will be left over, and these exhibit epact v of the following year, which by the arrangement of the epacts described above is placed next to 26 January, the day on which the new moon will fall in that year; because the 25 days of January preceding epact v, together with those 5 days that were left over in the month of December, make up a full lunation of 30 days, which is the number of days that any lunation ending in the month of January usually contains. Sometimes, though rarely, it comprises only 29 days — and then almost always when the golden number is j, as will be clear from what follows. So too, when a lunation ends on 8 December — which happens when epact xij is in use — 23 days of December remain, and for the following year these exhibit epact xxiiij, assigned to 8 January, the day on which the new moon will fall in that year. And the same reasoning holds for the rest.

14 NEVERTHELESS, when the golden number of some year is 19, a unit must be added to the days remaining after the lunation ending in the month of December, in order to obtain the epact of the following year — provided that epact xviiij or xix is not then in use. For while epact xviiij is running with golden number 19, the last lunation of the year ends on the final day of December, and no day is left over, because that lunation is only 29 days, whereas it ought to be 30 days and to end on the first day of January, as it does when epact xxiiij runs not with golden number 19 but with others. Therefore, since the following lunation then begins from epact

* is set against the first day of January, the epact of the following year will be * or 0, so that no unit is to be added to the 0 days of December that were left over after the last lunation. Likewise, when epact xix and golden number 19 run together, the last lunation of the year ends on the second-to-last day of December and one day is left over, since the next lunation begins on the last day, from the epact 19 written in the margin, as I said above. That one surplus day will give epact j of the following year without the addition of a unit, because that lunation then contains only 29 days — whereas in other years, when epact xix does not coincide with golden number 19, it comprises 30 days and closes on the last day of December. Why these two lunations then turn out to be only 29 days long will be explained below in chapter 16, on the embolismic months. As for why, on the other days that are left over after any lunation ending in December, a unit is added while golden number 19 is running, I explained that in the immediately preceding chapter.

5 BUT let me now show that the thirty epacts can be written into the Calendar in the natural order of the numbers, from j up to xxx (or up to *), for the purpose of indicating the new moons; and I shall make this clear as follows. In the Calendar the epacts are indicators of the new moons, so much so that any other signs whatever could be put in their place — just as before the correction the same new moons were shown by the golden numbers. Therefore, take our present practice: when the epact is xiiij, the new moon falls on 18 March, and in the following year on the 7th, with epact xxiiij running, which the table of epacts for the current century indicates. In the same way, if the epacts were arranged in the forward order, so that they did not differ from the days of the months, then the table of numbers showing the new moons would offer us, for epact xiiij, the number xviiij — and so again the new moon would fall on 18 March. Then in the following year the same table would give us, for epact xxiiij, the number viij, which is of course eleven units less than xviiij, the preceding year's number — just as epact xxiiij is eleven units greater than epact xiiij of the year before. In fact a Calendar was

proposed here at Rome to the Calendar commission by a certain skilled mathematician, in which the 30 numbers of the epacts were written out in the forward order, and they indicated the new moons perfectly correctly, no differently from our own epacts arranged in the retrograde order. But because in those numbers the increase of the epacts by 11 units is not preserved, as the nature of the epacts requires, but rather a decrease of 11 units, I preferred the retrograde order, so that the new moons should be indicated by the epacts more naturally — which is what I have shown in this chapter. It is clear, then, that the epacts can run through the Calendar in the forward order, even though they would not then observe the principle of the epacts but would merely be signs of the new moons: which some people denied could be done.

[Margin: That the 30 epacts can be arranged in the forward order in the Calendar.]

CAPVT XI.

Constructio tabulæ Expansæ Epactarum, & tabulæ æquationis earundem Epactarum, ex auctoris Calendarij sententia.

The construction of the expanded table of the epacts, and of the table of the equation of those same epacts, according to the mind of the author of the Calendar.

SINCE the new moons return to the same days of the months after 19 solar years have run out — though not to exactly the same hours, as was said in chapter 8 — it follows that out of the 30 epacts written into the Calendar only 19 are to be taken up, within one century or within several, corresponding to the 19 golden numbers one by one, and by these the new moons of those years are to be found. For these 19 epacts will indicate the new moons (just as the 19 golden numbers once did) for as long as the conjunctions of the two luminaries are found to return always to the same days after 19 completed years. But as soon as the new moons have shifted by about one day, whether toward the beginning of the month or toward its end — which must necessarily happen, both because of the common, that is, non-bissextile, centesimal years, and because of the $312\frac{1}{2}$ years in which the lunations anticipate by one day in the Calendar — then another 19 epacts must be adopted, corresponding to the same 19 golden numbers: some of them not found among the preceding 19 epacts, others already in use among them. Thus, when the new moons have moved up one day toward the beginnings of the months, the 19 epacts to be taken, corresponding to the same 19 golden numbers, are those which exceed by a unit, one by one, the other 19 that had

been in use up to that time; but if they have moved down one day toward the ends of the months, then the 19 epacts to be chosen are those which are one unit less, one by one, than the immediately preceding 19 epacts. For in this way it will come about that the first set of 19 epacts indicate in the Calendar that the new moons generally occur one day earlier than the earlier set did, and the second set about one day later. Accordingly I must now set out the method by which we may know which 19 epacts out of all 30 correspond to the 19 golden numbers at any given time, and when another 19 are to be called in. From this we shall learn without any trouble — as I shall write in the following chapter — by what technique the epact by which the new moons are shown may be drawn out, for any proposed year, from the known golden number of that same year. For this purpose a table of the epacts must be constructed, which I call the *Expanded* table, because it contains 30 lines, each of which embraces 19 epacts corresponding to the 19 golden numbers, so that every variation is displayed that can ever be found between the various sets of 19 epacts and the 19 golden numbers, which are always the same. Next, another table must be drawn up, the table of the equation of the epacts, by which we may know which line of epacts out of those 30 is to be taken at this or that time. The construction, then, of the expanded table of the epacts is as follows.

[Margin: Out of the 30 epacts only 19 are used, in one or in several spans of a hundred years, for showing the new moons.]

[Margin: When the 19 epacts to be taken are a unit greater than the preceding 19, and when they are less.]

2 AT the head of the table let all 19 golden numbers be written, the beginning being taken from golden number 3, which in the time of the Council of Nicaea was set against the Kalends of January, that is, against the first day of the year in the Calendar. Then in the lowest of all 30 lines of the whole table let 19 epacts be placed beneath the golden numbers, beginning from **j** and exceeding one another by eleven units, 30 being always cast away whenever the eleven units added to the preceding epact make a sum greater than 30 — yet in such a way that the epact following epact **xxvij**, which is set under golden number 19, exceeds it not by eleven but by twelve units, and accordingly that under golden number 1 the epact is **ix**,

[Margin: Construction of the expanded table of the epacts.]

and not **viiij** — because when 12 is added to 27 the result is 39, and when 30 is cast away, **ix** remains. Then, if from each of the epacts of this lowest line one

ascends upward through the natural series of the numbers, writing this sign * for **xxx**, and above it again **j**, then **ij**, **iiij**, and so on, the whole expanded table of the epacts will be composed. In it the epacts of any given line exceed one another by eleven units, except for the epacts written under golden number **j**: for these exceed the preceding ones, set under golden number 19, by twelve units, just as in the lowest line. Epact 25, however, under these eight larger golden numbers — 12. 13. 14. 15. 16. 17. 18. 19. — must be written in a colour or figure different from the others. Finally, along the left-hand side of the table the small letters of the alphabet are to be set in their natural order, putting the letter **a** opposite the lowest line, **b** opposite the second, and so on as far as **u**, omitting however the letter **o**, lest, on account of its likeness to the numeral character 0, it should breed confusion. After **u**, the capital letters of the alphabet are then to be written as well, omitting the letters **I. K. L. O.** for the same reason. For **I, L, O** are letters of number, since **I** signifies one, **L** fifty, and **O** nothing; while capital **K** differs too little from small **k**, and so the one can easily be taken for the other. These letters indicate which line of the epacts is to be adopted for use at any proposed time, as will be clear from the table of the equation of the epacts. The same letters are also employed in the Ecclesiastical Martyrology for declaring the age of the Moon on any given day, whenever the epacts written under golden number 3 are in use, as is evident from the Martyrology as restored to this new plan of the Calendar. For example: when the epact of some year is **xx**, the Martyrology letter of that same year will be **A**; when the epact is **vij**, the Martyrology letter will be **g**; and so on.

3 I HAVE assigned to these thirty lines of epacts in the expanded table the letters of the alphabet rather than the years of the Lord to which the individual lines correspond, because I want this expanded table to be perpetual as well, and capable of being fitted to any magnitude of the solar year whatever. That would not be the case if the years of the Lord were attached: partly because in so small a space all the years cannot be comprised, but chiefly because, since the magnitude of the solar year is still uncertain and not yet sufficiently explored, it must also be uncertain whether the years of the Lord will always correspond to those lines of epacts to which they have been prefixed. Therefore, so that posterity may be free to set up another method of equating the solar year, should this method of ours be found by astronomers after some years to depart from the truth and so need to be changed, I have attached the letters of the alphabet, so that any one of them can correspond to any year of the Lord. In this way it comes about that this table of epacts is both perpetual and adaptable to any magnitude of the year, provided one learns carefully from the table of the equation, which I shall construct shortly, which letter of the alphabet corresponds to this or that year of the Lord.

Only the table of the equation will have to be changed, if some defect, as I said, is detected in our equation — as I shall show a little further on.

[Margin: Why letters of the alphabet, rather than years of the Lord, are attached to the lines of the epacts in the expanded table.]

4 THE composition of the table of the equation of the epacts, which advances by centesimal years, will be set up as follows. In the time of the Council of Nicaea golden number 3 was prefixed to the first day of the year, as is clear from the old Calendar; the reason being that at that period, whenever the golden number was 3, the new moon occurred on the first day of the year, that is, on the Kalends of January, and on those days of the other months to which the same golden number 3 was prefixed. Since therefore in the new Calendar this epact * has likewise been placed against the first day of January, it follows that the first line of the epacts of the expanded table, in which epact * is set under golden number 3, corresponds to the golden numbers in the time of the Council of Nicaea, and in the following years too, until the Moon requires an equation — that is, until the new moons fall on other days. For wherever epact * stands in the new Calendar, there golden number 3 stood in the time of the Council of Nicaea. And where epact **xj** is placed, following epact * in the first line of the expanded table, there golden number 4 was placed, which follows golden number 3 at the head of the table. And where epact **xxij** is written, following epact **xj**, there golden number 5 had its place. In the same way all the remaining epacts set in the first line of the expanded table have their seats in those places of the new Calendar in which the golden numbers corresponding to them at the head of that same expanded table were placed in the old Calendar. This will become clear if we carefully compare the days of the months of the new Calendar opposite all 19 epacts placed in the first line of the expanded table with the days of the months of the old Calendar opposite all 19 golden numbers. A few places in the Calendar are excepted, in which some difference is found — which is no wonder, because in February and in some other months of the old Calendar the equation of the lunations, whereby they should be alternately of 30 and of 29 days, was not made on exactly the same days as those on which it was made by us through epacts **xxiiij** and **xxv** assigned to the same day in six months, as I said a little earlier. Nor can it be said on that account that the cycle of the golden number is not rightly arranged in the old Calendar, or the cycle of the epacts in the new; since each of them has lunations alternately of 30 and of 29 days, as the plan requires. For although this does not occur in exactly the same places in the two Calendars, and so the new moons of the one do not correspond in every respect to the new moons of the other, it matters little, since no cycle can correspond in every particular to the lunations

in the heavens, as I shall show below. But of these places, which are only 12, in which the new Calendar differs from the old in the arrangement of the cycle, I shall say more in chapter 14. The paschal lunations of March and April, however — which is more to the point — do not differ in any respect in the old Calendar from the same lunations in the new. Therefore, since the 19 epacts written in the first line of the expanded table correspond in the new Calendar to the golden numbers of the old Calendar — that is, since those epacts occupy the same days in the new Calendar that the golden numbers occupied in the old — and since the Council of Nicaea was held around the year of the Lord 325, the capital letter **P**, which is prefixed to the first line of epacts in the expanded table, must be placed to the left of the year 320 in the table of the equation. I preferred to take this year rather than the year 325 because it is close to the time of the Council of Nicaea and is the more notable of the two, since it is bissextile, and therefore better suited to the table of the equation, given that this table advances by centesimal years, which are themselves also bissextile.

[Margin: Construction of the table of the equation of the epacts.]

NEXT, since from the birth of Christ down to the Council of Nicaea 300 years and more elapsed, the new moons must have occurred later in the time of Christ our Lord than in the time of the Council of Nicaea, because over a span of 300 years they move their seats forward in the Calendar by nearly a whole day, as I said above. From this it follows that in the time of Christ another 19 epacts would have corresponded to the same 19 golden numbers, if this cycle of the epacts and the new Calendar had then been in use — namely those contained in the second line of the expanded table,

and which are one unit less, one by one, than the epacts of the first line. For all the epacts of the second line are placed in the new Calendar below the epacts contained in the first line, and accordingly nearly all the new moons will be indicated one day later by the epacts of the second line than by the epacts written in the first line, which I said were in use at the time of the Council of Nicaea. And if in place of the epacts of the second line the golden numbers were put in the Calendar, as they correspond at the head of the expanded table to those epacts of the second line, all the golden numbers would be seen to stand one day lower than the golden numbers at the time of the Council of Nicaea. For this reason, in the table of the equation, beside the year of the Lord I, the capital letter **N** must be written, which in the expanded table is prefixed to the second line of the epacts.

5 FURTHERMORE, in order that the order of the equation of the Moon — by which, as I said, the new moons anticipate by one day over a span of 312½ years

— may be rightly established for the years after the Council of Nicaea, a root must first be fixed from which an equation of this kind is to take its beginning. For although, as I said, the first line of epacts of the expanded table agrees with the cycle of the golden number as published in the time of the Council of Nicaea, I shall nevertheless make it plain, as follows, that the root of the equation is not to be referred to that period but to many years after that Council. The Church of God, in order to celebrate the movable feasts properly, is not much concerned that the new moons found by the cycle should agree exactly with the new moons drawn out from the tables of the mean motions (for it disregards the true motions altogether, as was said above); on the contrary, it deliberately arranges the cycle in the Calendar so that its new moons follow shortly after those elicited from the tables — precisely so that it may not sometimes happen that the paschal 14th Moon which the cycle offers runs ahead of the mean full moon by so wide an interval that Easter is celebrated before that full moon, contrary to the decrees of the Fathers and of the Councils, as I shall teach more fully a little further on. Since therefore the cycle of the golden number, as it was arranged by the Fathers of the Council of Nicaea, shows that around the year of the Lord 325 the new moons generally fell on the same days on which, by the tables of the mean motions, they are known to have occurred in the heavens, that arrangement of the golden number made in the time of the Council of Nicaea cannot be judged suited to the use of the Church — since it shows the conjunctions of the luminaries to have taken place earlier than the practice of the Church requires, and so would not seldom have presented Easter as to be celebrated before the mean full moon (about which I shall write more below). Rather, it must have begun to be serviceable (so far as concerns the proper celebration of the movable feasts) some years after the Council of Nicaea had passed — as many years, that is, as are needed for the new moons to anticipate in the Calendar by enough that the golden numbers should now show them so long after the astronomical mean new moons that there is no danger of Easter being able to be celebrated before the mean full moon, save very rarely, through the imperfection of the cycle. This came about in the year of the Lord 550, that is, 200 years and more after the Council of Nicaea, at which time Justinian I held the Roman empire. For then the golden numbers indicated the new moons nearly sixteen hours later than in the time of the Council of Nicaea, as is established from the astronomical tables. At that same period, too, all the disagreements between Greeks and Latins were removed, and the cycle of the golden number came into use as it had been set out in the Calendar according to the norm of the Council of Nicaea by Abbot Dionysius [Dionysius Exiguus] around the year of the Lord 532, in the reign of that same Justinian I.

[Margin: That by the practice of the Church the new moons should be indicated by the cycle after the new moons of the heavens.]

[Margin: The new moons of the golden numbers around the time of the Council of Nicaea were nearly the same as those that occurred in the heavens.]

[Margin: The new moons of the golden numbers around the year 550 fell later than those in the heavens, and were therefore better suited to the use of the Church.]

[Margin: Where the root of the equation of the epacts is to be fixed.]

6 I THEREFORE fix the root of the equation in the year 550, because at that time the cycle of the golden number showed the new moons more correctly, and more suitably for the celebration of the movable feasts, as will be clear from what I am about to say. Nor is it an objection that on this reckoning the paschal 14th Moon is sometimes indicated by the cycle later than it should be. For less fault is committed in the celebration of Easter if the 15th Moon is taken for the 14th than if the 14th is taken for the 15th, as Theophilus, bishop of Alexandria, rightly warns in his letter to the emperor Theodosius the Elder — because the greater number contains the lesser, but the lesser does not likewise contain the greater. Since, however, in the table of the equation I record only the centesimal years, as being the more celebrated and better known, I shall lay it down that the Moon moves her seats forward by one day over a span of three hundred years, although in fact her equation requires $312\frac{1}{2}$ years; so that we anticipate the true equation by $12\frac{1}{2}$ years, of which nevertheless account must be taken when the sum collected from them has made up 100 years. For just as above, in the equation of the solar year, I determined that the intercalary day should be omitted in every centesimal year, thereby anticipating the true equation, according to the Alphonsine tables, by 34 years — of which nevertheless account is taken in every fourth centesimal year (for since they will then have grown to a sum of 136 years, unless in every fourth centesimal year the intercalation of one day were made in the usual way, the equinoxes would slip by a whole day toward the ends of the months) — so too in the equation of the Moon account must be taken of those $12\frac{1}{2}$ years omitted in every three-hundredth year, so that when the sum collected from them reaches 100 years, the equation of the Moon is then not to be applied in the three-hundredth year after the immediately preceding equation, but in the four-hundredth: because the Moon then anticipates by one day in the Calendar not in the three-hundredth year but in the four-hundredth. For since we lay it down that in 300 years the Moon moves her seats forward by one day $12\frac{1}{2}$ years earlier than she ought, it follows that we lay it down that in

600 years she moves her seats forward 25 years before the case requires, and in 1200 years 50 years too early, and in 2400 years a hundred years earlier than the case demands. Since, then, over a span of 100 years the Moon moves her seats forward by nearly eight hours — because we lay it down that in 300 years she anticipates her seats by a whole day, that is, by 24 hours — it follows that if the equation is applied 100 years earlier than it ought to be, she will have climbed upward in the Calendar toward the beginnings of the months by only 16 hours. The equation is therefore not to be applied then; rather one must wait a further 100 years, in which the Moon will climb upward another 8 hours, which together with the earlier 16 make 24, that is, one whole natural day, on account of which the Moon then necessarily requires an equation, lest the new moons be shown in the Calendar a whole day later than is fitting. But in which centesimal years the sum of the omitted $12\frac{1}{2}$ years grows to 100, and the equation of the Moon must therefore be deferred to the following centesimal year, will become plain from what I shall shortly subjoin.

7 THIS being laid down, since the table of the equation advances by centesimal years, as I said, I shall prefix to the year 500 the same capital letter **P**, to signify that the same first line of epacts is then to be resumed which had been in use in the time of the Council of Nicaea — seeing that around the year of the Lord 500 the cycle of the golden number had already become better suited to the use of the Church than in the very time of the Council of Nicaea, as I explained above. And although on this reckoning we anticipate by 50 years the root of the equation which I fixed in the year 550, I shall nevertheless take account of those years too in their proper place. Next, since after 300 years the Moon anticipates

[Margin: Continuation of the table of the equation through the centesimal years, down to the year 1582.]

anticipates one day in the Calendar, the line of epacts to be taken up then will be the last one — the line whose epacts each stand one day earlier in the Calendar, toward the beginnings of the months, than the corresponding epacts of the first line, and each of which is greater by one unit than the corresponding epact of this first line. For the epacts of that line are formed from these by the addition of one unit, casting out 30 whenever the sum is greater than 30, and writing the sign * when that sum is 30 — just as the epacts of any higher line are made up from the epacts of the line immediately below it. Such is the relation of the lowest line of the expanded table to the topmost: that is, the lowest is above this one. The expanded table must be understood as a kind of circle containing 30 rows that return upon themselves, so that the letters **P** (capital) and **a** (small) — and

therefore the first line and the lowest — are adjacent. Since this is so, the small letter **a** will have to be entered against the year 800 in the table of equation, since that year is the three-hundredth after the year 500. By the same reasoning, since after another 300 years the Moon anticipates a second day, the small letter **b** will have to be entered against the year 1100 in the table of equation. And in the same way the small letter **c** will have to be prefixed to the year 1400.

[Margin: How the equation of the epacts is established for the year of the correction, 1582.]

[Margin: What the letter of the equation is for the year of the correction, 1582.]

MOREOVER, since in the year 1582 ten days were removed from the month of October so that the vernal equinox might be restored to 21 March, all the new moons must after this subtraction have fallen ten days later than the epact of that year — which before the correction was *vj* — indicated in the Calendar. The line of epacts that had to be taken up then in the expanded table was therefore the one against which the capital letter **D** is placed: the line, that is, which stands tenth from the line of the small letter **c** exclusive, counting down toward the small letters **b** and **a**, and from there toward the capitals **P**, **N**, **M**, **H**, **G**, **F**, **E**, **D**. For all the epacts of the line that has the capital letter **D** attached to it are ten units less than the epacts of the other line, the one prefixed by the small letter **c**, since the latter are formed from the former by the addition of 10 units, casting out 30 and writing the sign * whenever the sum is greater than 30. Likewise the epacts of the line marked with the capital letter **D** are entered in the Calendar 10 days below the epacts of the line marked with the small letter **c**, exclusive. And so in the table of equation the capital letter **D** must be set before the year 1582, after the removal of the 10 days from the month of October.

[Margin: How the table of the equation of the epacts is set up after the correction, account being taken also of the equation of the solar year, according to the mind of the author of the Calendar.]

8 SINCE, however, after the removal of the 10 days the solar year too must be equated by omitting three intercalary days in every 400 years — one in each of the first three centesimal years, the intercalary day being retained in the fourth centesimal, as I explained above — all the centesimal years must from now on be written in the table of equation, beginning with the year 1600, which is bissextile, and with the word [Bissextilis] attached in this form, *Biss.*, to every fourth year from it, namely the years 2000, 2400, 2800, 3200, and so on. In this way the table of equation — which, after the correction of the year made in 1582, depends on

both years, the lunar and the solar — will be more easily set up according to the mind of the author of the Calendar. Yet because after some thousands of years it no longer agrees with the celestial motions, I shall correct it in the following chapter 12, and continue it there on a different principle.

[Margin: Why the table of equation is set up here according to the mind of the author of the Calendar, although it must afterwards be emended.]

I have thought it best, nevertheless, to construct it here according to the view of the author of the Calendar, even though after some thousands of years it will prove useless — partly so that the true equation of the epacts, which I shall lay down in chapter 12, may be grasped more clearly, and partly so that everyone may see how easy and how uniform the equation of the author of the Calendar is, on the supposition (which he made to himself, though it is not in fact true) that one need always descend or ascend by a single line only in the expanded table of the epacts, which I shall shortly append, on account of the equation of the solar and lunar year. This will become clear from what I am about to say.

[Margin: What the letter of the equation is for the year 1600.]

The table of equation, then, is to be extended as follows according to the mind of the author of the Calendar. From the year 1400, where the lunar equation was last applied in the table of equation, down to the year 1600, 300 years have not yet elapsed, so the Moon will not need an equation. And since the solar equation is not called for then either — the year 1600 being bissextile in the usual way — the same capital letter **D** must be set before the year 1600 in the table of equation which was prefixed to the year 1582 after the removal of the ten days.

But from the year 1400 to the year 1700, 300 years have passed, so the Moon would need an equation then, if it were true that it anticipates one whole day in 300 years. In fact it more truly anticipates one day in $312\frac{1}{2}$ years; and those $12\frac{1}{2}$ years, dropped four times from the year 500 to the year 1700 (namely in the years 800, 1100, 1400, 1700), make up 50 years. We have also anticipated the Moon's equation by as many years again — for we ought to have equated the Moon in the year 850, not in the year 800, since from the year 550, where I placed the root of the equation, to the year 850 there fall 300 years — and these, with the earlier 50 years, make 100 years. The equation of the Moon is therefore not to be applied in the year 1700, but deferred to the following centesimal, 1800, as was said above.

But because in the year 1700 the intercalary day is omitted for the sake of the equation of the solar year — to keep the vernal equinox from wandering further from 21 March — the result is that the new moons then fall one day later. For that

reason the line of epacts to be taken up then will be the one that has the capital letter **C** at its head, whose epacts are nearly all one unit less than the epacts next to the capital letter **D**, and which therefore show nearly all the new moons in the Calendar one day later. Hence in the year 1700 the capital letter **C** must be prefixed in the table of equation.

[Margin: What the letter of the equation is for the year 1700.]

AGAIN, since in the year 1800 the intercalary day is once more omitted, the new moons ought once more to fall one day later; but since at that point, as I said, the Moon needs an equation (for the equation of the Moon from the year 1700 was thrown forward into this centesimal), it follows that the new moons neither ascend nor descend, but remain on the same days. For the day by which the new moons are forced to descend toward the ends of the months on account of the equation of the solar year is restored toward the beginnings of the months by the equation of the Moon. The same capital letter **C**, therefore, must be set before the year 1800 in the table of equation.

[Margin: What the letter of the equation is for the year 1800.]

In the year 1900, however, when the intercalary day is again omitted, the new moons will descend by one day, and so the capital letter **B** is set before that year in the table of equation. The same letter is prefixed to the year 2000, because then neither is the intercalary day omitted nor have 300 years elapsed since the last equation of the Moon, made in the year 1820, so that neither year requires an equation. Likewise, since in the year 2100 both the intercalary day is omitted and at the same time [the Moon] requires an equation — 300 years having elapsed from the year 1820, when the last equation of the Moon was made, to the year 2100 — the result is that the new moons then neither ascend nor descend in the Calendar, but remain on the same days, as I said above of the year 1800. For that reason the same capital letter **B** is attached to the year 2100 in the table of equation. Further, since in the year 2200 the intercalary day is omitted and the Moon does not yet need an equation, the new moons will descend by one day, and therefore in the ta-

[Margin: What the letters of the equation are for the years 1900, 2000, 2100.]

-ble of equation the capital letter **A** will have to be entered against the year 2200. By the same reasoning the small letter **u** must be prefixed to the year 2300. But since in the year 2400 — the third centesimal after the year 2100, in which the Moon was equated — the Moon calls for an equation while the solar year does not require one, that centesimal year being bissextile, the new moons will

necessarily ascend by one day upward in the Calendar. Accordingly the line of epacts prefixed by the capital letter **A** must be resumed then, and consequently the same capital letter **A** must be placed against the year 2400 in the table of equation.

[Margin: What the letters of the equation are for the years 2200, 2300.]

In the year 2500, on account of the equation of the solar year that then takes place, the new moons are again forced to descend by one day; so the small letter **u** must again be affixed to that same year 2500, just as in the year 2300. And since in the year 2600 the solar year is equated by the omission of the intercalary day, while the lunar year does not yet need equating (having been equated in the year 2400), the new moons will again descend by a day, and so the small letter **t** must be set before the year 2600. The same letter is to be assigned to the year 2700 as well; for although the new moons would then be about to descend on account of the equation of the solar year that must be made, they will nevertheless ascend again on account of the equation of the lunar year which occurs then, and so will not change their seat. Indeed the same small letter **t** will be kept for the year 2800, because in that year neither the solar nor the lunar year is to be equated, and therefore all the new moons remain in the same state.

[Margin: What the letters of the equation are for the years 2600, 2700, 2800.]

AND in this way, according to the view of the author of the Calendar, the table of equation will be continued indefinitely, provided account is taken both of the intercalary day (whether omitted or retained) and of the equation of the Moon, which is owed to it every 300 years — and provided the $12\frac{1}{2}$ years dropped in each span of 300 years are not neglected, but that as soon as a total of 100 years has been collected from them, the equation of the Moon is deferred to the next centesimal year. This is what I did at the year 1700, from which I threw the Moon's equation forward into the year 1800. The same will have to be done again in the year 4200 — that is, 2400 years after the year 1800, into which the Moon's equation was postponed on account of those 100 years that had grown out of the omission of the $12\frac{1}{2}$ years. For the equation of the Moon which ought to be made in the year 4200, because of the 300 years elapsed since the last equation of the year 3900, must be made in the following centesimal year, 4300. In the same way, after another 2400 years the Moon's equation must be thrown forward from the year 6700 into the year 6800, and so on — so that in every span of 2500 years the Moon runs ahead of its seats in the Calendar by eight days.

[Margin: Continuation of the table of the equation of the epacts after the correction, through the centesimal years to infinity, according to the mind of the author of the Calendar.]

There follows the expanded Table of the Epacts, together with the perpetual table of the equation of the Epacts, according to the view of Luigi Lilio of Cirò [Aloysius Lilius], author of the Calendar.

TABVLA EPACTA

(the title runs on to the facing page: the catchword at the foot of this page is RVM)

[Margin: The letters of the epacts, indices for the variation of the times, corresponding to the same letters in the table of the equation of the epacts.]
(printed vertically down the left side of the table frame)

A V R E I — E P A C T Æ. ("Golden numbers — Epacts")

Index letter	iiij	iiiiij	v	vj	vij	viiij	ix	x	xj
P	*	xj	xxij	ijj	xiiiij	xxv	vi	xvii	xxvii j
N	xxix	x	xxj	ij	xiiij	xxiiiij	v	xvi	xxvij
M	xxvii j	ix	xx	j	xij	xxiiij	iiii	xv	xxvj
H	xxvij	viiij	xix	*	xj	xxij	iii	xiiii	xxv
G	xxvj	vij	xviiij	xxix	x	xxj	ij	xiii	xxiiiij
F	xxv	vj	xvij	xxvii j	ix	xx	j	xii	xxiiij
E	xxiiiij	v	xvj	xxvij	viiij	xix	*	xi	xxij
D	xxiiij	iiiiij	xv	xxvj	vij	xviiij	xxix	x	xxj
C	xxij	iiij	xiiiij	xxv	vj	xvij	xxvii j	ix	xx
B	xxj	ij	xiiij	xxiiiij	v	xvj	xxvij	viii	xix
A	xx	j	xij	xxiiij	iiiiij	xv	xxvj	vii	xviiij
u	xix	*	xj	xxij	iiij	xiiiij	xxv	vi	xvij
t	xviiij	xxix	x	xxj	ij	xiiij	xxiiiij	v	xvj
f	xvij	xxvii j	ix	xx	j	xij	xxiiij	iiii	xv

Index letter	iiij	iiij	v	vj	vij	viiij	ix	x	xj
r	xvj	xxvij	viiij	xix	*	xj	xxij	iii	xiiij
q	xv	xxvj	vij	xviiij	xxix	x	xxj	ii	xiiij
p	xiiij	xxv	vj	xvij	xxvii	ix	xx	i	xij
					j				
n	xiiij	xxiiij	v	xvj	xxvij	viiij	xix	*	xj
m	xij	xxiiij	iiij	xv	xxvj	vij	xviiij	xxix	x
l	xj	xxij	ij	xiiij	xxv	vj	xvij	xxvii	ix
								i	
k	x	xxj	ij	xiiij	xxiiij	v	xvj	xxvii	viiij
i	ix	xx	j	xij	xxiiij	iiij	xv	xxvi	vij
h	viiij	xix	*	xj	xxij	iiij	xiiij	xxv	vj
g	vij	xviiij	xxix	x	xxj	ij	xiiij	xxiiij	v
f	vj	xvij	xxvii	ix	xx	j	xij	xxiii	iiij
			j						
e	v	xvj	xxvij	viiij	xix	*	xj	xxii	iiij
d	iiij	xv	xxvj	vij	xviiij	xxix	x	xxi	ij
c	iiij	xiiij	xxv	vj	xvij	xxvii	ix	xx	j
						j			
b	ij	xiiij	xxiiij	v	xvj	xxvij	viiij	xix	*
a	j	xij	xxiiij	iiij	xv	xxvj	vij	xviii	xxix

RVM EXPANSA.

(The table title completes across the opening: TABVLA EPACTA- | RVM EXPANSA — "Expanded Table of the Epacts." The heading band likewise completes: AVREI | NVMERI, "Golden Numbers.")

NVMERI.

EPACTÆ.

Continuation of the expanded table of the epacts. The unheaded first column carries the index letters of the epact cycles; the ten numbered columns are the remaining golden numbers.

	xij	xiiij	xiiiij	xv	xvj	xvij	xviiij	xix	j	ij
P	ix	xx	j	xij	xxiiij	iiiij	xv	xxvi	viiij	xix
N	viiij	xix	*	xj	xxij	iiij	xiiiij	25	vij	xviiij
M	vij	xviiij	xxix	x	xxj	ij	xiiij	xxiiii	vj	xvij
H	vj	xvij	xxviiij	ix	xx	j	xij	xxiii	v	xvj
G	v	xvj	xxvij	viiij	xix	*	xj	xxii	iiiij	xv
F	iiiij	xv	xxvj	vij	xviiij	xxix	x	xxi	iiij	xiiiij
E	iiij	xiiiij	25	vj	xvij	xxviiij	ix	xx	ij	xiiij
D	ij	xiiij	xxiiiij	v	xvj	xxvij	viiij	xix	j	xij
C	j	xij	xxiiij	iiiij	xv	xxvj	vij	xviii	*	xj
B	*	xj	xxij	iiij	xiiiij	25	vi	xvii	xxix	x
A	xxix	x	xxj	ij	xiiij	xxiiiij	v	xvi	xxviiij	ix
u	xxviiij	ix	xx	j	xij	xxiiij	iiii	xv	xxvij	viiij
t	xxvij	viiij	xix	*	xj	xxij	iii	xiiiij	xxvj	vij
f	xxvj	vij	xviiij	xxix	x	xxj	ij	xiii	xxv	vj
r	25	vj	xvij	xxviiij	ix	xx	j	xii	xxiiiij	v
q	xxiiiij	v	xvj	xxvij	viiij	xix	*	xi	xxiiij	iiiij
p	xxiiij	iiiij	xv	xxvj	vij	xviiij	xxix	x	xxij	iiij
n	xxij	iiij	xiiiij	25	vj	xvij	xxviiij	ix	xxj	ij
m	xxj	ij	xiiij	xxiiiij	v	xvj	xxvij	viii	xx	j
l	xx	j	xij	xxiiij	iiiij	xv	xxvj	vii	xix	*
k	xix	*	xj	xxij	iiij	xiiiij	25	vi	xviiij	xxix
i	xviiij	xxix	x	xxj	ij	xiiij	xxiiiij	v	xvij	xxviiij
h	xvij	xxviiij	ix	xx	j	xij	xxiiij	iiii	xvj	xxvij
g	xvj	xxvij	viiij	xix	*	xj	xxij	iii	xv	xxvj
f	xv	xxvj	vij	xviiij	xxix	x	xxj	ii	xiiiij	xxv
e	xiiiij	25	vj	xvij	xxviiij	ix	xx	i	xiiij	xxiiiij
d	xiiij	xxiiiij	v	xvj	xxvij	viiij	xix	*	xij	xxiiij
c	xij	xxiiij	iiiij	xv	xxvj	vij	xviiij	xxix	xj	xxij
b	xj	xxij	iiij	xiiiij	25	vj	xvij	xxviii	x	xxj
a	x	xxj	ij	xiiij	xxiiiij	v	xvj	xxvii	ix	xx

[Margin (set vertically down the left edge of the table): Days omitted, over and above those 10 of the year of the correction. [Dies omissi præter illos 10 anni correctionis.]]

TABVLA ÆQVATIONIS

A perpetual table of equation for the expanded table of the epacts, on the view of the same author of the Calendar. [Tabulæ Epactarum expansæ perpetua, ex sententia eiusdem auctoris Calendarij.]

The table is set in three parallel panels of five columns each: "Dies omissi" (days omitted), an unheaded column of epact-cycle index letters, "Anni" (years), an unheaded column marking bissextile years (Biss.), and an unheaded final column carrying the correction symbols (℔ lunar equation, ℔℔ doubled, †).

Panel 1

Dies omissi		Anni	
	N	1	
	P	320	Biss.
	P	500	Biss.
	a	800	Biss. ℔
	b	110	Biss. ℔
		0	
	c	140	Biss. ℔
		0	
colspan →	<i>Detractis decem diebus.</i> — Ten days having been removed.		
	D	158	
		2	
	D	160	Biss.
		0	
1	C	170	†
		0	
2	C	180	℔ ℔
		0	
3	B	190	

Dies omissi		Ann i		
		0		
3	B	200	Biss.	
		0		
4	B	210		☾
		0		
5	A	220		
		0		
6	u	230		
		0		
6	A	240	Biss.	☾
		0		
7	u	250		
		0		
8	t	260		
		0		
9	t	270		☾
		0		
9	t	280	Biss.	
		0		
10	f	290		
		0		
11	f	300		☾
		0		
12	r	310		
		0		
12	r	320	Biss.	
		0		
13	r	330		☾
		0		
14	q	340		
		0		
15	p	350		
		0		

Dies omissi		Anni		
15	q	360 0	Biss.	☾
16	p	370 0		
17	n	380 0		
18	n	390 0		☾
18	n	400 0	Biss.	
19	m	410 0		
20	l	420 0		
21	l	430 0		☾ ☾
21	l	440 0	Biss.	
22	k	450 0		
23	k	460 0		☾
24	i	470 0		
24	i	480 0	Biss.	
25	i	490 0		☾

Panel 2

Dies omissi		Anni
26	h	5000
27	g	5100

Dies omissi	Anni			
27	h	5200	Biss.	☾
28	g	5300		
29	f	5400		
30	f	5500		☾
30	f	5600	Biss.	
31	e	5700		
32	e	5800		☾
33	d	5900		
33	d	6000	Biss.	
34	d	6100		☾
35	c	6200		
36	b	6300		
36	c	6400	Biss.	☾
37	b	6500		
38	a	6600		
39	P	6700		
39	a	6800	Biss.	☾ ☾
40	P	6900		
41	N	7000		
42	N	7100		☾
42	N	7200	Biss.	
43	M	7300		
44	M	7400		☾
45	H	7500		
45	H	7600	Biss.	
46	H	7700		☾
47	G	7800		
48	F	7900		
48	G	8000	Biss.	☾
49	F	8100	<i>hucusq; inclusiue bene respondent nouilunia. — up to this point, inclusive,</i>	

Dies omissi	Anni			
the new moons correspond well.				
50	E	8200		
51	E	8300		☾
51	E	8400	Biss.	
52	D	8500		
53	D	8600		☾
54	C	8700		
54	C	8800	Biss.	
55	C	8900		☾
56	B	9000		
57	A	9100		
57	A	9200	Biss.	
58	A	9300		☾ ☾

Panel 3

Dies omissi	Anni			
59	u	9400		
60	t	9500		
60	u	9600		
61	t	9700	Biss.	☾
62	f	9800		
63	f	9900		☾
63	f	10000	Biss.	
64	r	10100		
65	r	10200		☾
66	q	10300		
66	q	10400	Biss.	
67	q	10500		☾
68	p	10600		
69	n	10700		
69	p	10800	Biss.	☾

Dies omissi	Anni			
70	n	10900		
71	m	11000		
72	m	11100		☾
72	m	11200	Biss.	
73	l	11300		
74	l	11400		☾
75	k	11500		
75	k	11600	Biss.	
76	i	11700		†
77	i	11800		☾ ☾
78	h	11900		
78	h	12000	Biss.	
79	h	12100		☾
80	g	12200		
81	f	12300		
81	g	12400	Biss.	☾
82	f	12500		
83	e	12600		
84	e	12700		☾
84	c	12800	Biss.	
85	d	12900		
86	d	13000		☾
87	c	13100		
87	c	13200	Biss.	
88	c	13300		☾
89	b	13400		
90	a	13500		
90	b	13600	Biss.	☾
91	a	13700		

[The table of equation continues.]

Panel 1

Dies omissi		Anni		
92	P	13800		
93	P	13900		☾
93	P	14000	Biss.	
94	N	14100		
95	M	14200		
96	M	14300		☾ ☾
96	M	14400	Biss.	
97	H	14500		
98	H	14600		☾
99	G	14700		
99	G	14800	Biss.	
100	G	14900		☾
101	F	15000		
102	E	15100		
102	F	15200	Biss.	☾
103	E	15300		
104	D	15400		
105	D	15500		☾
105	D	15600	Biss.	
106	C	15700		
107	C	15800		☾
108	B	15900		
108	B	16000	Biss.	
109	B	16100		☾
110	A	16200		
111	u	16300		
111	A	16400	Biss.	☾
112	u	16500		
113	t	16600		
114	f	16700		

Dies omissi		Anni		
114	t	16800	Biss.	☾ ☾
115	f	16900		
116	r	17000		
117	r	17100		☾
117	r	17200	Biss.	
118	q	17300		
119	q	17400		☾
120	p	17500		
120	p	17600	Biss.	
121	p	17700		☾
122	n	17800		
123	m	17900		
123	n	18000	Biss.	☾
124	m	18100		
125	l	18200		
126	l	18300		☾
126	l	18400	Biss.	
127	k	18500		
128	k	18600		☾
129	i	18700		
129	i	18800	Biss.	
130	i	18900		☾

Panel 2

Dies omissi		Anni		
131	h	19000		
132	g	19100		
132	g	19200	Biss.	
133	g	19300		☾ ☾
134	f	19400		
135	e	19500		

Dies omissi		Anni		
135	f	19600	Biss.	☾
136	e	19700		
137	d	19800		
138	d	19900		☾
138	d	20000	Biss.	
139	c	20100		
140	c	20200		☾
141	b	20300		
141	b	20400	Biss.	
142	b	20500		☾
143	a	20600		
144	P	20700		
144	a	20800	Biss.	☾
145	P	20900		
146	N	21000		
147	N	21100		☾
147	N	21200	Biss.	
148	M	21300		
149	M	21400		☾
150	H	21500		
150	H	21600	Biss.	
151	G	21700		†
152	G	21800		☾ ☾
153	F	21900		
153	F	22000	Biss.	
154	F	22100		☾
155	E	22200		
156	D	22300		
156	E	22400	Biss.	☾
157	D	22500		
158	C	22600		

Dies omissi	Anni		
159	C	22700	☾
159	C	22800	Biss.
160	B	22900	
161	B	23000	☾
162	A	23100	
162	A	23200	Biss.
163	A	23300	☾
164	u	23400	
165	t	23500	
165	u	23600	Biss. ☾
166	t	23700	
167	f	23800	
168	f	23900	☾
168	f	24000	Biss.
169	r	24100	

Panel 3

Dies omissi	Anni		
170	q	24200	
171	q	24300	☾ ☾
171	q	24400	Biss.
172	p	24500	
173	p	24600	☾
174	n	24700	
174	n	24800	Biss.
175	n	24900	☾
176	m	25000	
177	l	25100	
177	m	25200	Biss. ☾
178	l	25300	
179	k	25400	

Dies omissi		Anni		
180	k	25500		☾
180	k	25600	Biss.	
181	i	25700		
182	i	25800		☾
183	h	25900		
183	h	26000	Biss.	
184	h	26100		☾
185	g	26200		
186	f	26300		
186	g	26400	Biss.	☾
187	f	26500		
188	e	26600		
189	d	26700		
189	e	26800	Biss.	☾ ☾
190	d	26900		
191	c	27000		
192	c	27100		☾
192	c	27200	Biss.	
193	b	27300		
194	b	27400		☾
195	a	27500		
195	a	27600	Biss.	
196	a	27700		☾
197	P	27800		
198	N	27900		
198	P	28000	Biss.	☾
199	N	28100		
200	M	28200		
201	M	28300		☾
201	M	28400	Biss.	
202	H	28500		

Dies omissi		Anni		
203	H	28600		☾
204	G	28700		
204	G	28800	Biss.	
205	G	28900		☾
206	F	29000		
207	E	29100		
207	E	29200	Biss.	
208	E	29300		☾ ☾

The perpetual table of the equation continues, running on without a break from the preceding page. Each of the three panels carries the same five columns: the days omitted [Dies omiffi], the index letter, the years [Anni], the bissextile mark [Biss.], and the lunar symbol.

Panel 1 (source PDF p. 130 / printed p. 114)

Dies omiffi	Index	Anni	Biss.	☾
209	D	29400		
210	C	29500		
210	D	29600	Biff.	☾
211	C	29700		
212	B	29800		
213	B	29900		☾
213	B	30000	Biff.	
214	A	30100		
215	A	30200		☾
216	u	30300		
216	u	30400	Biff.	
217	u	30500		☾
218	t	30600		
219	f	30700		
219	t	30800	Biff.	☾
220	f	30900		
221	r	31000		

Dies omiffi	Index	Anni	Biss.	☾
222	r	31100		☾
222	r	31200	Biff.	
223	q	31300		
224	q	31400		☾
225	p	31500		
225	p	31600	Biff.	
226	n	31700		†
227	n	31800		☾ ☾
228	m	31900		
228	m	32000	Biff.	
229	m	32100		☾
230	l	32200		
231	k	32300		
231	l	32400	Biff.	☾
232	k	32500		
233	i	32600		
234	i	32700		☾
234	i	32800	Biff.	
235	h	32900		
236	h	33000		☾
237	g	33100		
237	g	33200	Biff.	
238	g	33300		☾
239	f	33400		
240	e	33500		
240	f	33600	Biff.	☾
241	e	33700		
242	d	33800		
243	d	33900		☾
243	d	34000	Biff.	
244	c	34100		

Dies omiffi	Index	Anni	Biss.	☾
245	b	34200		
246	b	34300		☾ ☾
246	b	34400	Biff.	
247	a	34500		

Panel 2 (source PDF p. 130 / printed p. 114)

Dies omiffi	Index	Anni	Biss.	☾
248	a	34600		☾
249	P	34700		
249	P	34800	Biff.	
250	P	34900		☾
251	N	35000		
252	M	35100		
252	N	35200	Biff.	☾
253	M	35300		
254	H	35400		
255	H	35500		☾
255	H	35600	Biff.	
256	G	35700		
257	G	35800		☾
258	F	35900		
258	F	36000	Biff.	
259	F	36100		☾
260	E	36200		
261	D	36300		
261	E	36400	Biff.	☾
262	D	36500		
263	C	36600		
264	B	36700		
264	C	36800	Biff.	☾ ☾
265	B	36900		

Dies omiffi	Index	Anni	Biss.	☾
266	A	37000		
267	A	37100		☾
267	A	37200	Biff.	
268	u	37300		
269	u	37400		☾
270	t	37500		
270	t	37600	Biff.	
271	t	37700		☾
272	f	37800		
273	r	37900		
273	f	38000	Biff.	☾
274	r	38100		
275	q	38200		
276	q	38300		☾
276	q	38400	Biff.	
277	P	38500		
278	p	38600		☾
279	n	38700		
279	n	38800	Biff.	
280	n	38900		☾
281	m	39000		
282	l	39100		
282	l	39200	Biff.	
283	l	39300		☾ ☾
284	k	39400		
285	i	39500		
285	k	39600	Biff.	☾
286	i	39700		

Panel 3 (source PDF p. 130 / printed p. 114)

Dies omiffi	Index	Anni	Biss.	☾
287	h	39800		
288	h	39900		☾
288	h	40000	Biff.	
289	g	40100		
290	g	40200		☾
291	f	40300		
291	f	40400	Biff.	
292	f	40500		☾
293	e	40600		
294	d	40700		
294	e	40800	Biff.	☾
295	d	40900		
296	c	41000		
297	c	41100		☾
297	c	41200	Biff.	
298	b	41300		
299	b	41400		☾
300	a	41500		
300	a	41600	Biff.	
301	P	41700		†
302	P	41800		☾ ☾
303	N	41900		
303	N	42000	Biff.	
304	N	42100		☾
305	M	42200		
306	H	42300		
306	M	42400	Biff.	☾
307	H	42500		
308	G	42600		
309	G	42700		☾

Dies omiffi	Index	Anni	Biss.	☾
309	G	42800	Biff.	
310	F	42900		
311	F	43000		☾
312	E	43100		
312	E	43200	Biff.	
313	E	43300		☾
314	D	43400		
315	C	43500		
315	D	43600	Biff.	☾
316	C	43700		
317	B	43800		
318	B	43900		☾
318	B	44000	Biff.	
319	A	44100		
320	u	44200		
321	u	44300		☾ ☾
321	u	44400	Biff.	
322	t	44500		
323	t	44600		☾
324	f	44700		
324	f	44800	Biff.	
325	f	44900		☾

Panel 1 (source PDF p. 131 / printed p. 115)

Dies omiffi	Index	Anni	Biss.	☾
326	r	45000		
327	q	45100		
327	r	45200	Biff.	☾
328	q	45300		
329	p	45400		
330	p	45500		☾

Dies omiffi	Index	Anni	Biss.	☾
330	p	45600	Biff.	
331	n	45700		
332	n	45800		☾
333	m	45900		
333	m	46000	Biff.	
334	m	46100		☾
335	l	46200		
336	k	46300		
336	l	46400	Biff.	☾
337	k	46500		
338	i	46600		
339	h	46700		
339	i	46800	Biff.	☾ ☾
340	h	46900		
341	g	47000		
342	g	47100		☾
342	g	47200	Biff.	
343	f	47300		
344	f	47400		☾
345	e	47500		
345	e	47600	Biff.	
346	e	47700		☾
347	d	47800		
348	c	47900		
348	d	48000	Biff.	☾
349	c	48100		
350	b	48200		
351	b	48300		☾
351	b	48400	Biff.	
352	a	48500		
353	a	48600		☾

Dies omiffi	Index	Anni	Biss.	☾
354	P	48700		
354	P	48800	Biff.	
355	P	48900		☾
356	N	49000		
357	M	49100		
357	M	49200	Biff.	
358	M	49300		☾ ☾
359	H	49400		
360	G	49500		
360	H	49600	Biff.	☾
361	G	49700		
362	F	49800		
363	F	49900		☾
363	F	50000	Biff.	
364	E	50100		

Panel 2 (source PDF p. 131 / printed p. 115)

Dies omiffi	Index	Anni	Biss.	☾
365	E	50200		☾
366	D	50300		
366	D	50400	Biff.	
367	D	50500		☾
368	C	50600		
369	B	50700		
369	C	50800	Biff.	☾
370	B	50900		
371	A	51000		
372	A	51100		☾
372	A	51200	Biff.	
373	u	51300		
374	u	51400		☾

Dies omiffi	Index	Anni	Biss.	☾
375	t	51500		
375	t	51600	Biff.	
376	f	51700		†
377	f	51800		☾ ☾
378	r	51900		
378	r	52000	Biff.	
379	r	52100		☾
380	q	52200		
381	P	52300		
381	q	52400	Biff.	☾
382	P	52500		
383	n	52600		
384	n	52700		☾
384	n	52800	Biff.	
385	m	52900		
386	m	53000		☾
387	l	53100		
387	l	53200	Biff.	
388	l	53300		☾
389	k	53400		
390	i	53500		
390	k	53600	Biff.	☾
391	i	53700		
392	h	53800		
393	h	53900		☾
393	h	54000	Biff.	
394	g	54100		
395	f	54200		
396	f	54300		☾ ☾
396	f	54400	Biff.	
397	e	54500		

Dies omiffi	Index	Anni	Biss.	☾
398	e	54600		☾
399	d	54700		
399	d	54800	Biff.	
400	d	54900		☾
401	c	55000		
402	b	55100		
402	c	55200	Biff.	☾
403	b	55300		

Panel 3 (source PDF p. 131 / printed p. 115)

Dies omiffi	Index	Anni	Biss.	☾
404	a	55400		
405	a	55500		☾
405	a	55600	Biff.	
406	P	55700		
407	P	55800		☾
408	N	55900		
408	N	56000	Biff.	
409	N	56100		☾
410	M	56200		
411	H	56300		
411	M	56400	Biff.	☾
412	H	56500		
413	G	56600		
414	F	56700		
414	G	56800	Biff.	☾ ☾
415	F	56900		
416	E	57000		
417	E	57100		☾
417	E	57200	Biff.	
418	D	57300		

Dies omiffi	Index	Anni	Biss.	☾
419	C	57400		☾
420	C	57500		
420	C	57600	Biff.	
421	D[?]	57700		☾
422	B	57800		
423	A	57900		
423	B	58000	Biff.	☾
324	A	58100		
425	u	58200		
426	u	58300		☾
426	u	58400	Biff.	
427	t	58500		
428	t	58600		☾
429	f	58700		
429	f	58800	Biff.	
430	f	58900		☾
431	r	59000		
432	q	59100		
432	q	59200	Biff.	
433	q	59300		☾ ☾
434	p	59400		
435	n	59500		
435	P	59600	Biff.	☾
436	n	59700		
437	m	59800		
438	m	59900		☾
438	m	60000	Biff.	
439	l	60100		
440	l	60200		☾
441	k	60300		
441	k	60400	Biff.	

Dies omiffi	Index	Anni	Biss.	☾
442	k	60500		☾

Panel 1 (source PDF p. 132 / printed p. 116)

Dies omiffi	Index	Anni	Biss.	☾
443	i	60600		
444	h	60700		
444	i	60800	Biff.	☾
445	h	60900		
446	g	61000		
447	g	61100		☾
447	g	61200	Biff.	
448	f	61300		
449	f	61400		☾
450	e	61500		
450	e	61600	Biff.	
451	d	61700		†
452	d	61800		☾ ☾
453	c	61900		
453	c	62000	Biff.	
454	c	62100		☾
455	b	62200		
456	a	62300		
456	b	62400	Biff.	☾
457	a	62500		
458	P	62600		
459	P	62700		☾
459	P	62800	Biff.	
460	N	62900		
461	N	63000		☾
462	M	63100		
462	M	63200	Biff.	

Dies omiffi	Index	Anni	Biss.	☾
463	M	63300		☾
464	H	63400		
465	G	63500		
465	H	63600	Biff.	☾
466	G	63700		
467	F	63800		
468	F	63900		☾
468	F	64000	Biff.	
469	E	64100		
470	D	64200		
471	D	64300		☾ ☾
471	D	64400	Biff.	
472	C	64500		
473	C	64600		☾
474	B	64700		
474	B	64800	Biff.	
475	B	64900		☾
476	A	65000		
477	u	65100		
477	A	65200	Biff.	☾
478	u	65300		
479	t	65400		
480	t	65500		☾
480	t	65600	Biff.	
481	f	65700		

Panel 2 (source PDF p. 132 / printed p. 116)

Dies omiffi	Index	Anni	Biss.	☾
482	f	65800		☾
483	r	65900		
483	r	66000	Biff.	

Dies omiffi	Index	Anni	Biss.	☾
484	r	66100		☾
485	q	66200		
486	p	66300		
486	q	66400	Biff.	☾
487	p	66500		
488	n	66600		
489	m	66700		
489	n	66800	Biff.	☾ ☾
490	m	66900		
491	l	67000		
492	l	67100		☾
492	l	67200	Biff.	
493	k	67300		
494	k	67400		☾
495	i	67500		
495	i	67600	Biff.	
496	i	67700		☾
497	h	67800		
498	g	67900		
498	h	68000	Biff.	☾
499	g	68100		
500	f	68200		
501	f	68300		☾
501	f	68400	Biff.	
502	e	68500		
503	e	68600		☾
504	d	68700		
504	d	68800	Biff.	
505	d	68900		☾
506	c	69000		
507	b	69100		

Dies omiffi	Index	Anni	Biss.	☾
507	b	69200	Biff.	
508	b	69300		☾ ☾
509	a	69400		
510	P	69500		
510	a	69600	Biff.	☾
511	P	69700		
512	N	69800		
513	N	69900		☾
513	N	70000	Biff.	
514	M	70100		
515	M	70200		☾
516	H	70300		
516	H	70400	Biff.	
517	H	70500		☾
518	G	70600		
519	F	70700		
519	G	70800	Biff.	☾
520	F	70900		

Panel 3 (source PDF p. 132 / printed p. 116)

Dies omiffi	Index	Anni	Biss.	☾
521	E	71000		
522	E	71100		☾
522	E	71200	Biff.	
523	D	71300		
524	D	71400		☾
525	C	71500		
525	C	71600	Biff.	
526	B	71700		†
527	B	71800		☾ ☾
528	A	71900		

Dies omiffi	Index	Anni	Biss.	☾
528	A	72000	Biff.	
529	A	72100		☾
530	u	72200		
531	t	72300		
531	u	72400	Biff.	☾
532	t	72500		
533	f[?]	72600		
534	f	72700		☾
534	f	72800	Biff.	
535	r	72900		
536	r	73000		☾
537	q	73100		
537	q	73200	Biff.	
538	q	73300		☾
539	P	73400		
540	n	73500		
540	P	73600	Biff.	☾
541	n	73700		
542	m	73800		
543	m	73900		☾
543	m	74000	Biff.	
544	l	74100		
545	k	74200		
546	k	74300		☾ ☾
546	k	74400	Biff.	
547	i	74500		
548	i	74600		☾
549	h	74700		
549	h	74800	Biff.	
550	h	74900		☾
551	g	75000		

Dies omiffi	Index	Anni	Biss.	☾
552	f	75100		
552	g	75200	Biff.	☾
553	f	75300		
545	e	75400		
555	e	75500		☾
555	e	75600	Biff.	
556	d	75700		
557	d	75800		☾
558	c	75900		
558	c	76000	Biff.	
559	c	76100		☾

The table of days omitted continues without a break. The page sets three panels side by side; each panel carries the printed heads *Dies omiffi* and *Anni*, with three further unheaded columns — the index letter, the bissextile mark *Biff.*, and the lunar-symbol column. The panels are transcribed in reading order, left to right.

Table of days omitted and the years of the lunar equation (continued) — p. 117

Panel 1

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
560	b	76200		
561	a	76300		
561	b	76400	Biff.	☾
562	a	76500		
563	P	76600		
564	N	76700		
564	P	76800	Biff.	☾ ☾
565	N	76900		
566	M	77000		
567	M	77100		☾

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
567	M	77200	Biff.	
568	H	77300		
569	H	77400		☾
570	G	77500		
570	G	77600	Biff.	
571	G	77700		☾
572	F	77800		
573	E	77900		
573	F	78000	Biff.	☾
574	E	78100		
575	D	78200		
576	D	78300		☾
576	D	78400	Biff.	
577	C	78500		
578	C	78600		☾
579	B	78700		
579	B	78800	Biff.	
580	B	78900		☾
581	A	79000		
582	u	79100		
582	u	79200	Biff.	
583	u	79300		☾ ☾
584	t	79400		
585	f	79500		
585	t	79600	Biff.	☾
586	f	79700		
587	r	79800		
588	r	79900		☾
588	r	80000	Biff.	
589	q	80100		
590	q	80200		☾

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
591	p	80300		
591	p	80400	Biff.	
592	P	80500		☾
593	n	80600		
594	m	80700		
594	n	80800	Biff.	☾
595	m	80900		
596	l	81000		
597	l	81100		☾
597	l	81200	Biff.	
598	k	81300		

Panel 2

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
599	k	81400		☾
600	i	81500		
600	i	81600	Biff.	
601	h	81700		†
602	h	81800		☾ ☾
603	g	81900		
603	g	82000	Biff.	
604	g	82100		☾
605	f	82200		
606	e	82300		
606	f	82400	Biff.	☾
607	e	82500		
608	d	82600		
609	d	82700		☾
609	d	82800	Biff.	
610	c	82900		
611	c	83000		☾

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
612	b	83100		
612	b	83200	Biff.	
613	b	83300		☾
614	a	83400		
615	P	83500		
615	a	83600	Biff.	☾
616	P	83700		
617	N	83800		
618	N	83900		☾
618	N	84000	Biff.	
619	M	84100		
620	H	84200		
621	H	84300		☾ ☾
621	H	84400	Biff.	
622	G	84500		
623	G	84600		☾
624	F	84700		
624	F	84800	Biff.	
625	F	84900		☾
626	E	85000		
627	D	85100		
627	E	85200	Biff.	☾
628	D	85300		
629	C	85400		
630	C	85500		☾
630	C	85600	Biff.	
631	B	85700		
632	B	85800		☾
633	A	85900		
633	A	86000	Biff.	
634	A	86100		☾

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
635	u	86200		
636	t	86300		
636	u	86400	Biff.	☾
637	t	86500		

Panel 3

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
638	f	86600		
639	r	86700		
639	f	86800	Biff.	☾ ☾
640	r	86900		
641	q	87000		
642	q	87100		☾
642	q	87200	Biff.	
643	p	87300		
644	P	87400		☾
645	n	87500		
645	n	87600	Biff.	
646	n	87700		☾
647	m	87800		
648	l	87900		
648	m	88000	Biff.	☾
649	l	88100		
650	k	88200		
651	k	88300		☾
651	k	88400	Biff.	
652	i	88500		
653	i	88600		☾
654	h	88700		
654	h	88800	Biff.	
655	h	88900		☾

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
656	g	89000		
657	f	89100		
657	f	89200	Biff.	
658	f	89300		☾ ☾
659	e	89400		
660	d	89500		
660	e	89600	Biff.	☾
661	d	89700		
662	c	89800		
663	c	89900		☾
663	c	90000	Biff.	
664	b	90100		
665	b	90200		☾
666	a	90300		
666	a	90400	Biff.	
667	a	90500		☾
668	P	90600		
669	N	90700		
669	P	90800	Biff.	☾
670	N	90900		
671	M	91000		
672	M	91100		☾
672	M	91200	Biff.	
673	H	91300		
674	H	91400		☾
675	G	91500		
675	G	91600	Biff.	
676	F	91700		†

Table of days omitted and the years of the lunar equation (continued)
— p. 118

Panel 1

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
677	F	91800		☾ ☾
678	E	91900		
678	E	92000	Biff.	
679	E	92100		☾
680	D	92200		
681	C	92300		
681	D	92400	Biff.	☾
682	C	92500		
683	B	92600		
684	B	92700		☾
684	B	92800	Biff.	
685	A	92900		
686	A	93000		☾
687	u	93100		
687	u	93200	Biff.	
688	u	93300		☾
689	t	93400		
690	f	93500		
690	t	93600	Biff.	☾
691	f	93700		
692	r	93800		
693	r	93900		☾
693	r	94000	Biff.	
694	q	94100		
695	p	94200		
696	p	94300		☾ ☾
696	p	94400	Biff.	

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
697	n	94500		
698	n	94600		☾
699	m	94700		
699	m	94800	Biff.	
700	m	94900		☾
701	l	95000		
702	k	95100		
702	l	95200	Biff.	☾
703	k	95300		
704	l [?]	95400		
705	i	95500		☾
705	i	95600	Biff.	
706	h	95700		
707	h	95800		☾
708	g	95900		
708	g	96000	Biff.	
709	g	96100		☾
710	f	96200		
711	e	96300		
711	f	96400	Biff.	☾
712	e	96500		
713	d	96600		
714	c	96700		
714	d	96800	Biff.	☾ ☾
715	c	96900		

Panel 2

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
716	b	97000		
717	b	97100		☾
717	b	97200	Biff.	

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
718	a	97300		
719	a	97400		☾
720	P	97500		
720	P	97600	Biff.	
721	P	97700		☾
722	N	97800		
723	M	97900		
723	N	98000	Biff.	☾
724	M	98100		
725	H	98200		
726	H	98300		☾
726	H	98400	Biff.	
727	G	98500		
728	G	98600		☾
729	F	98700		
729	F	98800	Biff.	
730	F	98900		☾
731	E	99000		
732	D	99100		
732	D	99200	Biff.	
733	D	99300		☾ ☾
734	C	99400		
735	B	99500		
735	C	99600	Biff.	☾
736	B	99700		
737	A	99800		
738	A	99900		☾
738	A	100000	Biff.	
739	u	100100		
740	u	100200		☾
741	t	100300		

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
741	t	100400	Biff.	
742	t	100500		☾
743	f	100600		
744	r	100700		
744	f	100800	Biff.	☾
745	r	100900		
746	q	101000		
747	q	101100		☾
747	q	101200	Biff.	
748	p	101300		
749	P	101400		☾
750	n	101500		
750	n	101600	Biff.	
751	m	101700		†
752	m	101800		☾ ☾
753	l	101900		
753	l	102000	Biff.	
754	l	102100		☾

Panel 3

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
755	k	102200		
756	i	102300		
756	k	102400	Biff.	☾
757	i	102500		
758	h	102600		
759	h	102700		☾
759	h	102800	Biff.	
760	g	102900		
761	g	103000		☾
762	f	103100		

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
762	f	103200	Biff.	
763	f	103300		☾
764	e	103400		
765	d	103500		
765	e	103600	Biff.	☾
766	d	103700		
767	c	103800		
768	c	103900		☾
768	c	104000	Biff.	
769	b	104100		
770	a	104200		
771	a	104300		☾ ☾
771	a	104400	Biff.	
772	P	104500		
773	P	104600		☾
774	N	104700		
774	N	104800	Biff.	
775	N	104900		☾
776	M	105000		
777	H	105100		
777	M	105200	Biff.	☾
778	H	105300		
779	G	105400		
780	G	105500		☾
780	G	105600	Biff.	
781	F	105700		
782	F	105800		☾
783	E	105900		
783	E	106000	Biff.	
784	E	106100		☾
785	D	106200		

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
786	C	106300		
786	D	106400	Biff.	☾
787	C	106500		
788	B	106600		
789	A	106700		
789	B	106800	Biff.	☾ ☾
790	A	106900		
791	u	107000		
792	u	107100		☾
792	u	107200	Biff.	
793	t	107300		

Table of days omitted and the years of the lunar equation (continued)
— p. 119

Panel 1

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
794	t	107400		☾
795	f	107500		
795	f	107600	Biff.	
796	f	107700		☾
797	r	107800		
798	q	107900		
798	r	108000	Biff.	☾
799	q	108100		
800	p	108200		
801	p	108300		☾
801	p	108400	Biff.	
802	n	108500		
803	n	108600		☾
804	m	108700		
804	m	108800	Biff.	

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
805	m	108900		☾
806	l	109000		
807	k	109100		
807	k	109200	Biff.	
808	k	109300		☾ ☾
809	i	109400		
810	h	109500		
810	i	109600	Biff.	☾
811	h	109700		
812	g	109800		
813	g	109900		☾
813	g	110000	Biff.	
814	f	110100		
815	f	110200		☾
816	e	110300		
816	e	110400	Biff.	
817	e	110500		☾
818	d	110600		
819	c	110700		
819	d	110800	Biff.	☾
820	c	110900		
821	b	111000		
822	b	111100		☾
822	b	111200	Biff.	
823	a	111300		
824	a	111400		☾
825	P	111500		
825	P	111600	Biff.	
826	N	111700		†
827	N	111800		☾ ☾
828	M	111900		

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
828	M	112000	Biff.	
829	M	112100		☾
830	H	112200		
831	G	112300		
831	H	112400	Biff.	☾
832	G	112500		

Panel 2

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
833	F	112600		
834	F	112700		☾
834	F	112800	Biff.	
835	E	112900		
836	E	113000		☾
837	D	113100		
837	D	113200	Biff.	
838	D	113300		☾
839	C	113400		
840	B	113500		
840	C	113600	Biff.	☾
841	B	113700		
842	A	113800		
843	A	113900		☾
843	A	114000	Biff.	
844	u	114100		
845	t	114200		
846	t	114300		☾ ☾
846	t	114400	Biff.	
847	f	114500		
848	f	114600		☾
849	r	114700		

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
849	r	114800	Biff.	
850	r	114900		☾
851	q	115000		
852	p	115100		
852	q	115200	Biff.	☾
853	p	115300		
854	n	115400		
855	n	115500		☾
855	n	115600	Biff.	
856	m	115700		
857	m	115800		☾
858	l	115900		
858	l	116000	Biff.	
859	l	116100		☾
860	k	116200		
861	i	116300		
861	k	116400	Biff.	☾
862	i	116500		
863	h	116600		
864	g	116700		
864	h	116800	Biff.	☾ ☾
865	g	116900		
866	f	117000		
867	f	117100		☾
867	f	117200	Biff.	
868	e	117300		
869	e	117400		☾
870	d	117500		
870	d	117600	Biff.	
871	d	117700		☾

Panel 3

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
872	c	117800		
873	b	117900		
873	c	118000	Biff.	☾
874	b	118100		
875	a [?]	118200		
876	a	118300		☾
876	a	118400	Biff.	
877	P	118500		
878	P	118600		☾
879	N	118700		
879	N	118800	Biff.	
880	N	118900		☾
881	M	119000		
882	H	119100		
882	H	119200	Biff.	
883	H	119300		☾ ☾
884	G	119400		
885	F	119500		
885	G	119600	Biff.	☾
886	F	119700		
887	E	119800		
888	E	119900		☾
888	E	120000	Biff.	
889	D	120100		
890	D	120200		☾
891	C	120300		
891	C	120400	Biff.	
892	C	120500		☾
893	B	120600		
894	A	120700		
894	B	120800	Biff.	☾

Dies omiffi	(index)	Anni	(bissextile)	(lunar)
895	A	120900		
896	u	121000		
897	u	121100		
867	u	121200	Biff.	☾
898	t	121300		
899	t	121400		☾
900	f	121500		
900	f	121600	Biff.	
901	r	121700		†
902	r	121800		☾ ☾
903	q	121900		
903	q	122000	Biff.	
904	q	122100		☾
905	P	122200		
906	n	122300		
906	P	122400	Biff.	☾
907	n	122500		
908	m	122600		
909	m	122700		☾
909	m	122800	Biff.	
910	l	122900		

[The Dies omiffi entry printed 867 against the year 121200 stands between 897 and 898 and is transcribed exactly as printed; 867 also occurs earlier, twice, on this same page against 117100 and 117200.]

The table has not ended: the last line of p. 119 reaches year 122900, and the catchword 911 carries the Dies omiffi count forward to the next page. No prose of Caput XI resumes on these three pages, and no marginal note is set beside the table.

The table of days omitted [dies omissi] continues, three panels to the page. Each panel carries the same column heads: Dies omiffi (with the index letter beside it), Anni, the bissextile column (Biff.), and the lunar-equation column carrying the crescent sorts (single ☾, doubled ☾☾) and the dagger †.

[p. 120] Panel 1

Dies omiffi		Anni		
911	l	123000		☾
912	k	123100		
912	k	123200	Biff.	
913	k	123300		☾
914	i	123400		
915	h	123500		
915	i	123600	Biff.	☾
916	h	123700		
917	g	123800		
918	g	123900		☾
918	g	124000	Biff.	
919	f	124100		
920	e	124200		
921	e	124300		☾ ☾
921	e	124400	Biff.	
922	d	124500		
923	d	124600		☾
924	c	124700		
924	c	124800	Biff.	
925	c	124900		☾
926	b	125000		
927	a	125100		
927	b	125200	Biff.	☾
928	a	125300		
929	P	125400		
930	P	125500		☾
930	P	125600	Biff.	
931	N	125700		
932	N	125800		☾
933	M	125900		

Dies omiffi		Anni		
933	M	126000	Biff.	
934	M	126100		☾
935	H	126200		
936	G	126300		
936	H	126400	Biff.	☾
937	G	126500		
938	F	126600		
939	E	126700		
939	F	126800	Biff.	☾ ☾
940	E	126900		
941	D	127000		
942	D	127100		☾
942	D	127200	Biff.	
943	C	127300		
944	C	127400		☾
945	B	127500		
945	B	127600	Biff.	
946	B	127700		☾
947	A	127800		
948	[?]	127900		
948	A	128000	Biff.	☾
949	u	128100		

[p. 120] Panel 2

Dies omiffi		Anni.		
950	t	128200		
951	t	128300		☾
951	t	128400	Biff.	
952	f	128500		
953	f	128600		☾
954	r	128700		

Dies omiffi		Anni.		
954	r	128800	Biff.	
955	r	128900		☾
956	q	129000		
957	P	129100		
957	P	129200	Biff.	
958	P	129300		☾ ☾
959	n	129400		
960	m	129500		
960	n	129600	Biff.	☾
961	m	129700		
961	l	129800		
962	l	129900		☾
963	l	130000	Biff.	
964	k	130100		
965	k	130200		☾
966	i	130300		
966	i	130400	Biff.	
967	i	130500		☾
968	h	130600		
969	g	130700		
969	h	130800	Biff.	☾
970	g	130900		
971	f	131000		
972	f	131100		☾
972	f	131200	Biff.	
973	e	131300		
974	e	131400		☾
975	d	131500		
975	d	131600	Biff.	
976	c	131700		†
977	c	131800		☾ ☾

Dies omiffi		Anni.		
978	b	131900		
978	b	132000	Biff.	
979	b	132100		☾
980	a	132200		
981	P	132300		
981	a	132400	Biff.	☾
982	P	132500		
983	N	132600		
984	N	132700		☾
984	N	132800	Biff.	
985	M	132900		
986	M	133000		☾
987	H	133100		
987	H	133200	Biff.	
988	H	133300		☾

[p. 120] Panel 3

Dies omiffi		Anni		
989	G	133400		
990	F	133500		
990	G	133600	Biff.	☾
991	F	133700		
992	E	133800		
993	E	133900		☾
993	E	134000	Biff.	
994	D	134100		
995	C	134200		
996	C	134300		☾ ☾
996	C	134400	Biff.	
997	B	134500		
998	B	134600		☾

Dies omiffi	Anni			
999	A	134700		
999	A	134800	Biff.	
1000	A	134900		☾
1001	u	135000		
1002	t	135100		
1002	u	135200	Biff.	☾
1003	t	135300		
1004	f	135400		
1005	f	135500		☾
1005	f	135600	Biff.	
1006	r	135700		
1007	r	135800		☾
1008	q	135900		
1008	q	136000	Biff.	
1009	q	136100		☾
1010	P	136200		
1011	n	136300		
1011	P	136400	Biff.	☾
1012	n	136500		
1013	m	136600		
1014	l	136700		
1014	m	136800	Biff.	☾ ☾
1015	l	136900		
1016	k	137000		
1017	k	137100		☾
1017	k	137200	Biff.	
1018	i	137300		
1019	i	137400		☾
1020	h	137500		
1020	h	137600	Biff.	
1021	h	137700		☾

Dies omiffi		Anni		
1022	g	137800		
1023	f	137900		
1023	g	138000	Biff.	☾
1024	f	138100		
1025	e	138200		
1026	e	138300		☾
1026	e	138400	Biff.	
1027	d	138500		

[p. 121] Panel 1

Dies omiffi		Anni		
1028	d	138600		☾
1029	c	138700		
1029	c	138800	Biff.	
1030	c	138900		☾
1031	b	139000		
1032	a	139100		
1032	a	139200	Biff.	
1033	a	139300		☾ ☾
1034	P	139400		
1035	N	139500		
1035	P	139600	Biff.	☾
1036	N	139700		
1037	M	139800		
1038	M	139900		☾
1038	M	140000	Biff.	
1039	H	140100		
1040	H	140200		☾
1041	G	140300		
1041	G	140400	Biff.	
1042	G	140500		☾

Dies omiffi	Anni			
1043	F	140600		
1044	E	140700		
1044	F	140800	Biff.	☾
1045	E	140900		
1046	D	141000		
1047	D	141100		☾
1047	D	141200	Biff.	
1048	C	141300		
1049	C	141400		☾
1050	B	141500		
1050	B	141600	Biff.	
1051	A	141700		†
1052	A	141800		☾ ☾
1053	u	141900		
1053	u	142000	Biff.	
1054	u	142100		☾
1055	t	142200		
1056	f	142300		
1056	t	142400	Biff.	☾
1057	f	142500		
1058	r	142600		
1059	r	142700		☾
1059	r	142800	Biff.	
1060	q	142900		
1061	q	143000		☾
1062	p	143100		
1062	p	143200	Biff.	
1063	p	143300		☾
1064	n	143400		
1065	m	143500		
1065	n	143600	Biff.	☾

Dies omiffi		Anni
1066	m	143700

[p. 121] Panel 2

Dies omiffi		Anni	
1067	l	143800	
1068	l	143900	☾
1068	l	144000	Biff.
1069	k	144100	
1070	i	144200	
1071	i	144300	☾ ☾
1071	i	144400	Biff.
1072	h	144500	
1073	h	144600	☾
1074	g	144700	
1074	g	144800	Biff.
1075	g	144900	☾
1076	f	145000	
1077	e	145100	
1077	f	145200	Biff. ☾
1078	e	145300	
1079	d	145400	
1080	d	145500	☾
1080	d	145600	Biff.
1081	c	145700	
1082	c	145800	☾
1083	b	145900	
1083	b	146000	Biff.
1084	b	146100	☾
1085	a	146200	
1086	P	146300	
1086	a	146400	Biff. ☾

Dies omiffi	Anni			
1087	P	146500		
1088	N	146600		
1089	M	146700		
1089	N	146800	Biff.	☾ ☾
1090	M	146900		
1091	H	147000		
1092	H	147100		☾
1092	H	147200	Biff.	
1093	G	147300		
1094	G	147400		☾
1095	F	147500		
1095	F	147600	Biff.	
1096	F	147700		☾
1097	E	147800		
1098	D	147900		
1098	E	148000	Biff.	☾
1099	D	148100		
1100	C	148200		
1101	C	148300		☾
1101	C	148400	Biff.	
1102	B	148500		
1103	B	148600		☾
1104	A	148700		
1104	A	148800	Biff.	
1105	A	148900		☾

[p. 121] Panel 3

Dies omiffi	Anni			
1106	u	149000		
1107	t	149100		
1107	t	149200	Biff.	

Dies omiffi		Anni		
1108	t	149300		☾ ☾
1109	f	149400		
1110	r	149500		
1110	f	149600	Biff.	☾
1111	r	149700		
1112	q	149800		
1113	q	149900		☾
1113	q	150000	Biff.	
1114	p	150100		
1115	p	150200		☾
1116	n	150300		
1116	n	150400	Biff.	
1117	n	150500		☾
1118	m	150600		
1119	l	150700		
1119	m	150800	Biff.	☾
1120	[?]	150900		
1121	k	151000		
1122	k	151100		☾
1122	k	151200	Biff.	
1123	i	151300		
1124	i	151400		☾
1125	h	151500		
1125	h	151600	Biff.	
1126	g	151700		†
1127	g	151800		☾ ☾
1128	f	151900		
1128	f	152000	Biff.	
1129	f	152100		☾
1130	e	152200		
1131	d	152300		

Dies omiffi		Anni		
1131	e	152400	Biff.	☾
1132	d	152500		
1133	c	152600		
1134	c	152700		☾
1134	c	152800	Biff.	
1135	b	152900		
1136	b	153000		☾
1137	a	153100		
1137	a	153200	Biff.	
1138	a	153300		☾
1139	P	153400		
1140	N	153500		
1140	P	153600	Biff.	☾
1141	N	153700		
1142	M	153800		
1143	M	153900		☾
1143	M	154000	Biff.	
1144	H	154100		

[p. 122] Panel 1

Dies omiffi		Anni.		
1145	G	154200		
1146	G	154300		☾ ☾
1146	G	154400	Biff.	
1147	F	154500		
1148	F	154600		☾
1149	E	154700		
1149	E	154800	Biff.	
1150	E	154900		☾
1151	D	155000		
1152	C	155100		

Dies omiffi		Anni.		
1152	D	155200	Biff.	☾
1153	C	155300		
1154	B	155400		
1155	B	155500		☾
1155	B	155600	Biff.	
1156	A	155700		
1157	A	155800		☾
1158	u	155900		
1158	u	156000	Biff.	
1159	u	156100		☾
1160	t	156200		
1161	f	156300		
1161	t	156400	Biff.	☾
1162	f	156500		
1163	r	156600		
1164	q	156700		
1164	r	156800	Biff.	☾ ☾
1165	q	156900		
1166	p	157000		
1167	P	157100		☾
1167	P	157200	Biff.	
1168	n	157300		
1169	n	157400		☾
1170	m	157500		
1170	m	157600	Biff.	
1171	m	157700		☾
1172	l	157800		
1173	k	157900		
1173	l	158000	Biff.	☾
1174	k	158100		
1175	i	158200		

Dies omiffi		Anni.		
1176	i	158300		☾
1176	i	158400	Biff.	
1177	h	158500		
1178	h	158600		☾
1179	g	158700		
1179	g	158800	Biff.	
1180	g	158900		☾
1181	f	159000		
1182	e	159100		
1182	e	159200	Biff.	
1183	e	159300		☾ ☾

[p. 122] Panel 2

Dies omiffi		Anni		
1184	d	159400		
1185	c	159500		
1185	d	159600	Biff.	☾
1186	c	159700		
1187	b	159800		
1188	b	159900		☾
1188	b	160000	Biff.	
1189	a	160100		
1190	a	160200		☾
1191	P	160300		
1191	P	160400	Biff.	
1192	P	160500		☾
1193	N	160600		
1194	M	160700		
1194	N	160800	Biff.	☾
1195	M	160900		
1196	H	161000		

Dies omiffi	Anni			
1197	H	161100		☾
1197	H	161200	Biff.	
1198	G	161300		
1199	G	161400		☾
1200	F	161500		
1200	F	161600	Biff.	
1201	E	161700		†
1202	E	161800		☾ ☾
1203	D	161900		
1203	D	162000	Biff.	
1204	D	162100		☾
1205	C	162200		
1206	B	162300		
1206	C	162400	Biff.	☾
1207	B	162500		
1208	A	162600		
1209	A	162700		☾
1209	A	162800	Biff.	
1210	u	162900		
1211	u	163000		☾
1212	t	163100		
1112	t	163200	Biff.	
1213	t	163300		☾
1214	f	163400		
1215	r	163500		
1215	f	163600	Biff.	☾
1216	r	163700		
1217	q	163800		
1218	q	163900		☾
1218	q	164000	Biff.	
1219	p	164100		

Dies omiffi		Anni	
1220	n	164200	
1221	n	164300	☾ ☾
1221	n	164400	Biff.
1222	m	164500	

[p. 122] Panel 3

Dies omiffi		Anni	
1223	m	164600	☾
1224	l	164700	
1224	l	164800	Biff.
1225	l	164900	☾
1226	k	165000	
1227	i	165100	
1227	k	165200	Biff. ☾
1228	i	165300	
1229	h	165400	
1230	h	165500	☾
1230	h	165600	Biff.
1231	g	165700	
1232	g	165800	☾
1233	f	165900	
1233	f	166000	Biff.
1234	f	166100	☾
1235	e	166200	
1236	d	166300	
1236	e	166400	Biff. ☾
1237	d	166500	
1238	c	166600	
1239	b	166700	
1239	c	166800	Biff. ☾ ☾
1240	b	166900	

Dies omiffi		Anni		
1241	a	167000		
1242	a	167100		☾
1242	a	167200	Biff.	
1243	P	167300		
1244	P	167400		☾
1245	N	167500		
1245	N	167600	Biff.	
1246	N	167700		☾
1247	M	167800		
1248	H	167900		
1248	M	168000	Biff.	☾
1249	H	168100		
1250	G	168200		
1251	G	168300		☾
1251	G	168400	Biff.	
1252	F	168500		
1253	F	168600		☾
1254	E	168700		
1254	E	168800	Biff.	
1255	E	168900		☾ [?]
1256	D	169000		
1257	C	169100		
1257	C	169200	Biff.	
1258	C	169300		☾ ☾
1259	B	169400		
1260	A	169500		
1260	B	169600	Biff.	☾
1261	A	169700		

The table of the days omitted [dies omiffi] continues without break across all three pages; there is no prose on any of them. Each page carries three side-by-

side panels of five columns: the running count of days omitted, the index letter, the year, the bissextile mark, and the lunar-equation sort.

Page 123 — panel 1

Dies omiffi.		Anni		
1262	u	169800		
1263	u	169900		☾
1263	u	170000	Biff.	
1264	t	170100		
1265	t	170200		☾ [?]
1266	f	170300		
1266	f	170400	Biff.	
1267	f	170500		☾
1268	r	170600		
1269	q	170700		
1269	r	170800	Biff.	☾
1270	q	170900		
1271	p	171000		
1272	p	171100		☾
1272	p	171200	Biff.	
1273	n	171300		
1274	n	171400		☾
1275	m	171500		
1275	m	171600	Biff.	
1276	l	171700		†
1277	l	171800		☾ ☾
1278	k	171900		
1278	k	172000	Biff.	
1279	k	172100		☾
1280	i	172200		
1281	h	172300		
1281	i	172400	Biff.	☾
1282	h	172500		

Dies omiffi.	Anni		
1283	g	172600	
1284	g	172700	☾
1284	g	172800	Biff.
1285	f	172900	
1286	f	173000	☾
1287	e	173100	
1287	e	173200	Biff.
1288	e	173300	☾
1289	d	173400	
1290	c	173500	
1290	d	173600	Biff. ☾
1291	c	173700	
1292	b	173800	
1293	b	173900	☾
1293	b	174000	Biff.
1294	a	174100	
1295	P	174200	
1296	P	174300	☾ ☾
1296	P	174400	Biff.
1297	N	174500	
1298	N	174600	☾
1299	M	174700	
1299	M	174800	Biff.
1300	M	174900	☾

Page 123 — panel 2

Dies omiffi.	Anni		
1301	H	175000	
1302	G	175100	
1302	H	175200	Biff. ☾
1303	G	175300	

Dies omiffi.	Anni			
1304	F	175400		
1305	F	175500		☾
1305	F	175600	Biff.	
1306	E	175700		
1307	E	175800		☾
1308	D	175900		
1308	D	176000	Biff.	
1309	D	176100		☾
1310	C	176200		
1311	B	176300		
1311	C	176400	Biff.	☾
1312	B	176500		
1313	A	176600		
1314	u	176700		
1314	A	176800	Biff.	☾ ☾
1315	u	176900		
1316	t	177000		
1317	t	177100		☾
1317	t	177200	Biff.	
1318	f	177300		
1319	f	177400		☾
1320	r	177500		
1320	r	177600	Biff.	
1321	r	177700		☾
1322	q	177800		
1323	P	177900		
1323	q	178000	Biff.	☾
1324	P	178100		
1325	n	178200		
1326	n	178300		☾
1326	n	178400	Biff.	

Dies omiffi.		Anni		
1327	m	178500		
1328	m	178600		☾
1329	l	178700		
1329	l	178800	Biff.	
1330	l	178900		☾
1331	k	179000		
1332	i	179100		
1332	i	179200	Biff.	
1333	i	179300		☾ ☾
1334	h	179400		
1335	g	179500		
1335	h	179600	Biff.	☾
1336	g	179700		
1337	f	179800		
1338	f	179900		☾
1338	f	180000	Biff.	
1339	e	180100		

Page 123 — panel 3

Dies omiffi.		Anni		
1340	e	180200		☾
1341	d	180300		
1341	d	180400	Biff.	
1342	d	180500		☾
1343	c	180600		
1344	b	180700		
1344	c	180800	Biff.	☾
1345	b	180900		
1346	a	181000		
1347	a	181100		☾
1347	a	181200	Biff.	

Dies omiffi.	Anni		
1348	P	181300	
1349	P	181400	☾
1350	N	181500	
1350	N	181600	Biff.
1351	M	181700	†
1352	M	181800	☾ ☾
1353	H	181900	
1353	H	182000	Biff.
1354	H	182100	☾
1355	G	182200	
1356	F	182300	
1356	G	182400	Biff. ☾
1357	F	182500	
1358	E	182600	
1359	E	182700	☾
1359	E	182800	Biff.
1360	D	182900	
1361	D	183000	☾
1362	C	183100	
1362	C	183200	Biff.
1363	C	183300	☾
1364	B	183400	
1365	A	183500	
1365	B	183600	Biff. ☾
1266	A	183700	
1367	u	183800	
1368	u	183900	☾
1368	u	184000	Biff.
1369	t	184100	
1370	f	184200	
1371	f	184300	☾ ☾

Dies omiffi.		Anni		
1371	f	184400	Biff.	
1372	r	184500		
1373	r	184600		☾
1374	q	184700		
1374	q	184800	Biff.	
1375	q	184900		☾
1376	p	185000		
1377	n	185100		
1377	P	185200	Biff.	☾
1378	n	185300		

Page 124 — panel 1

Dies omiffi.		Anni.		
1379	m	185400		
1380	m	185500		☾
1380	m	185600	Biff.	
1381	l	185700		
1382	l	185800		☾
1383	k	185900		
1383	k	186000	Biff.	
1384	k	186100		☾
1385	i	186200		—
1386	h	186300		
1386	i	186400	Biff.	☾
1487	h	186500		
1388	g	186600		
1389	f	186700		
1389	g	186800	Biff.	☾ ☾
1390	f	186900		
1391	e	187000		
1392	e	187100		☾

Dies omiffi.		Anni.		
1392	e	187200	Biff.	
1393	d	187300		
1394	d	187400		☾
1395	c	187500		
1395	c	187600	Biff.	
1396	c	187700		☾
1397	b	187800		
1398	a	187900		
1398	b	188000	Biff.	☾
1399	a	188100		
1400	P	188200		
1401	P	188300		☾
1401	P	188400	Biff.	
1402	N	188500		
1403	N	188600		☾
1404	M	188700		
1404	M	188800	Biff.	
1405	M	188900		☾
1406	H	189000		
1407	G	189100		
1407	G	189200	Biff.	
1408	G	189300		☾ ☾
1409	F	189400		
1410	E	189500		
1410	F	189600	Biff.	☾
1411	E	189700		
1412	D	189800		
1413	D	189900		☾
1413	D	190000	Biff.	
1414	C	190100		
1415	C	190200		☾

Dies omiffi.		Anni.		
1416	B	190300		
1416	B	190400	Biff.	
1417	B	190500		☾

Page 124 — panel 2

Dies omiffi.		Anni		
1418	A	190600		
1419	u	190700		
1419	A	190800	Biff.	☾
1420	u	190900		
1421	t	191000		
1422	t	191100		☾
1422	t	191200	Biff.	
1423	f	191300		
1424	f	191400		☾
1425	r	191500		
1425	r	191600	Biff.	
1426	q	191700		†
1427	q	191800		☾ ☾
1428	p	191900		
1428	p	192000	Biff.	
1429	p	192100		☾
1430	n	192200		
1431	m	192300		
1431	n	192400	Biff.	☾
1432	m	192500		
1433	l	192600		
1434	l	192700		☾
1434	l	192800	Biff.	
1435	k	192900		
1436	k	193000		☾

Dies omiffi.		Anni		
1437	i	193100		
1437	i	193200	Biff.	
1438	i	193300		☾
1439	h	193400		
1440	g	193500		
1440	h	193600	Biff.	☾
1441	g	193700		
1442	f	193800		
1443	f	193900		☾
1443	f	194000	Biff.	
1444	e	194100		
1445	d	194200		
1446	d	194300		☾ ☾
1446	d	194400	Biff.	
1447	c	194500		
1448	c	194600		☾
1449	b	194700		
1449	b	194800	Biff.	
1450	b	194900		☾
1451	a	195000		
1452	P	195100		
1452	a	195200	Biff.	☾
1453	P	195300		
1454	N	195400		
1455	N	195500		☾
1455	N	195600	Biff.	
1456	M	195700		

Page 124 — panel 3

Dies omiffi.		Anni		
1457	M	195800		☾

Dies omiffi.	Anni			
1458	H	195900		
1458	H	196000	Biff.	
1459	H	196100		☾
1460	G	196200		
1461	F	196300		
1461	G	196400	Biff.	☾
1462	F	196500		
1463	E	196600		
1464	D	196700		
1464	E	196800	Biff.	☾ ☾
1465	D	196900		
1466	C	197000		
1467	C	197100		☾
1467	C	197200	Biff.	
1468	B	197300		
1469	B	197400		☾
1470	A	197500		
1470	A	197600	Biff.	
1471	A	197700		☾
1472	u	197800		
1473	t	197900		
1473	u	198000	Biff.	☾
1474	t	198100		
1475	f	198200		
1476	f	198300		☾
1476	f	198400	Biff.	
1477	r	198500		
1478	r	198600		☾
1479	q	198700		
1479	q	198800	Biff.	
1480	q	198900		☾

Dies omiffi.		Anni		
1481	p	199000		
1482	n	199100		
1482	n	199200	Biff.	
1483	n	199300		☾ ☾
1484	m	199400		
1485	l	199500		
1485	m	199600	Biff.	☾
1486	l	199700		
1487	k	199800		
1488	k	199900		☾
1488	k	200000	Biff.	
1489	i	200100		
1490	i	200200		☾
1491	h	200300		
1491	h	200400	Biff.	
1492	h	200500		☾
1493	g	200600		
1494	f	200700		
1494	g	200800	Biff.	☾
1495	f	200900		

Page 125 — panel 1

Dies omiffi.		Anni		
1496	e	201000		
1497	e	201100		☾
1497	e	201200	Biff.	
1498	d	201300		
1499	d	201400		☾
1500	c	201500		
1500	c	201600	Biff.	
1501	b	201700		†

Dies omiffi.		Anni		
1502	b	201800		☾ ☾
1503	a	201900		
1503	a	202000	Biff.	
1504	a	202100		☾
1505	P	202200		
1506	N	202300		
1506	P	202400	Biff.	☾
1507	N	202500		
1508	M	202600		
1509	M	202700		☾
1509	M	202800	Biff.	
1510	H	202900		
1511	H	203000		☾
1512	G	203100		
1512	G	203200	Biff.	
1513	G	203300		☾
1514	F	203400		
1515	E	203500		
1515	F	203600	Biff.	☾
1516	E	203700		
1517	D	203800		
1518	D	203900		☾
1518	D	204000	Biff.	
1519	C	204100		
1520	B	204200		
1521	B	204300		☾ ☾
1521	B	204400	Biff.	
1522	A	204500		
1523	A	204600		☾
1524	u	204700		
1524	u	204800	Biff.	

Dies omiffi.		Anni		
1525	u	204900		☾
1526	t	205000		
1527	f	205100		
1527	t	205200	Biff.	☾
1528	f	205300		
1529	r	205400		
1530	r	205500		☾
1530	r	205600	Biff.	
1531	q	205700		
1532	q	205800		☾
1533	P	205900		
1533	P	206000	Biff.	
1534	P	206100		☾

Page 125 — panel 2

Dies omiffi.		Anni.		
1535	n	206200		
1536	m	206300		
1536	n	206400	Biff.	☾
1537	m	206500		
1538	l	206600		
1539	k	206700		
1539	l	206800	Biff.	☾ ☾
1540	k	206900		
1541	i	207000		
1542	i	207100		☾
1542	i	207200	Biff.	
1543	h	207300		
1544	h	207400		☾
1545	g	207500		
1545	g	207600	Biff.	

Dies omiffi.		Anni.		
1546	g	207700		☾
1547	f	207800		
1548	e	207900		
1548	f	208000	Biff.	☾
1549	e[?]	208100		
1550	d	208200		
1551	d	208300		☾
1551	d	208400	Biff.	
1552	c	208500		
1553	c	208600		☾
1554	b	208700		
1554	b	208800	Biff.	
1555	b	208900		☾
1556	a	209000		
1557	P	209100		
1557	P	209200	Biff.	
1558	P	209300		☾ ☾
1559	N	209400		
1560	M	209500		
1560	N	209600	Biff.	☾
1561	M	209700		
1562	H	209800		
1563	H	209900		☾
1563	H	210000	Biff.	
1564	G	210100		
1565	G	210200		☾
1566	F	210300		
1566	F	210400	Biff.	
1567	F	210500		☾
1568	E	210600		
1569	D	210700		

Dies omiffi.		Anni.		
1569	E	210800	Biff.	☾
1570	D	210900		
1571	C	211000		
1572	C	211100		☾
1572	C	211200	Biff.	
1573	B	211300		

Page 125 — panel 3

Dies omiffi.		Anni		
1574	B	211400		☾
1575	A	211500		
1575	A	211600	Biff.	
1576	u	211700		†
1577	u	211800		☾ ☾
1578	t	211900		
1578	t	212000	Biff.	
1579	t	212100		☾
1580	f	212200		
1581	r	212300		
1581	f	212400	Biff.	☾
1582	r	212500		
1583	q	212600		
1584	q	212700		☾
1584	q	212800	Biff.	
1585	p	212900		
1586	p	213000		☾
1587	n	213100		
1587	n	213200	Biff.	
1588	n	213300		☾
1589	m	213400		
1590	l	213500		

Dies omiffi.		Anni		
1590	m	213600	Biff.	☾
1591	l	213700		
1592	k	213800		
1593	k	213900		☾
1593	k	214000	Biff.	
1594	i	214100		
1595	h	214200		
1596	h	214300		☾ ☾
1596	h	214400	Biff.	
1597	g	214500		
1598	g	214600		☾
1599	f	214700		
1599	f	214800	Biff.	
1600	f	214900		☾
1601	e	215000		
1602	d	215100		
1602	e	215200	Biff.	☾
1603	d	215300		
1604	c	215400		
1605	c	215500		☾
1605	c	215600	Biff.	
1606	b	215700		
1607	b	215800		☾
1608	a	215900		
1608	a	216000	Biff.	
1609	a	216100		☾
1610	P	216200		
1611	N	216300		
1611	P	216400	Biff.	☾
1612	N	216500		

The table of days omitted [dies omissi] continues, in three panels across the page. Each panel carries five columns: the count of days omitted, an index letter, the year of the period [anni], the bissextile marker, and the lunar sort.

Panel 1 — p. 126

Dies omiffi.		Anni		☾
1613	M	216600		
1614	H	216700		
1614	M	216800	Biff.	☾ ☾
1615	H	216900		
1616	G	217000		
1617	G	217100		☾
1617	G	217200	Biff.	
1618	F	217300		
1619	F	217400		☾
1620	E	217500		
1620	E	217600	Biff.	
1621	E	217700		☾
1622	D	217800		
1623	C	217900		
1623	D	218000	Biff.	☾
1624	C	218100		
1625	B	218200		
1626	B	218300		☾
1626	B	218400	Biff.	
1627	A	218500		
1628	A	218600		☾
1629	u	218700		
1629	u	218800	Biff.	
1630	u	218900		☾
1631	t	219000		
1632	f	219100		
1632	f	219200	Biff.	

Dies omiffi.		Anni		Ⓒ
1633	f	219300		Ⓒ Ⓒ
1634	r	219400		
1635	q	219500		
1635	r	219600	Biff.	Ⓒ
1636	q	219700		
1637	p	219800		
1638	p	219900		Ⓒ
1638	p	220000	Biff.	
1639	n	220100		
1640	n	220200		Ⓒ
1641	m	220300		
1641	m	220400	Biff.	
1642	m	220500		Ⓒ
1643	l	220600		
1644	k	220700		
1644	l	220800	Biff.	Ⓒ
1645	k	220900		
1646	i	221000		
1647	i	221100		Ⓒ
1647	i	221200	Biff.	
1648	h	221300		
1649	h	221400		Ⓒ
1650	g	221500		
1650	g	221600	Biff.	
1651	f	221700		†

Panel 2 — p. 126

Dies omiffi.		Anni.		Ⓒ
1652	f	221800		Ⓒ Ⓒ
1653	e	221900		
1653	e	222000	Biff.	

Dies omiffi.		Anni.		☾
1654	e	222100		☾
1655	d	222200		
1656	c	222300		
1656	d	222400	Biff.	☾
1657	c	222500		
1658	b	222600		
1659	b	222700		☾
1659	b	222800	Biff.	
1660	a	222900		
1661	a	223000		☾
1662	P	223100		
1662	P	223200	Biff.	
1663	P	223300		☾
1664	N	223400		
1665	M	223500		
1665	N	223600	Biff.	☾
1666	M	223700		
1667	H	223800		
1668	H	223900		☾
1668	H	224000	Biff.	
1669	G	224100		
1670	F	224200		
1671	F	224300	Biff.	
1671	F	224400		☾ ☾
1672	E	224500		
1673	E	224600		☾
1674	D	224700		
1674	D	224800	Biff.	
1675	D	224900		☾
1676	C	225000		
1677	B	225100		

Dies omiffi.		Anni.		☾
1677	C	225200	Biff.	☾
1678	B	225300		
1679	A	225400		
1680	A	225500		☾
1680	A	225600	Biff.	
1681	u	225700		
1682	u	225800		☾
1683	t	225900		
1683	t	226000	Biff.	
1684	t	226100		☾
1685	f	226200		
1686	r	226300		
1686	f	226400	Biff.	☾
1687	r	226500		
1688	q	226600		
1689	p	226700		
1689	q	226800	Biff.	☾ ☾
1690	p	226900		

Panel 3 — p. 126

Dies omiffi.		Anni		☾
1691	n	227000		
1692	n	227100		☾
1692	n	227200	Biff.	
1693	m	227300		
1694	m	227400		☾
1695	l	227500		
1695	l	227600	Biff.	
1696	l	227700		☾
1697	k	227800		
1698	i	227900		

Dies omiffi.		Anni		☾
1698	k	228000	Biff.	☾
1699	i	228100		
1700	h	228200		
1701	h	228300		☾
1701	h	228400	Biff.	
1702	g	228500		
1703	g	228600		☾
1704	f	228700		
1704	f	228800	Biff.	
1705	f	228900		☾
1706	e	229000		
1707	d	229100		
1707	d	229200	Biff.	
1708	d	229300		☾ ☾
1709	c	229400		
1710	b	229500		
1710	c	229600	Biff.	☾
1711	b	229700		
1712	a	229800		
1713	a	229900		☾
1713	a	230000	Biff.	
1714	P	230100		
1715	P	230200		☾
1716	N	230300		
1716	N	230400	Biff.	
1717	N	230500		☾
1718	M	230600		
1719	H	230700		
1719	M	230800	Biff.	☾
1720	H	230900		
1721	G	231000		

Dies omiffi.		Anni		☾
1722	G	231100		☾
1722	G	231200	Biff.	
1723	F	231300		
1724	F	231400		☾
1725	E	231500		
1725	E	231600	Biff.	
1726	D	231700		†
1727	D	231800		☾ ☾
1728	C	231900		
1728	C	232000	Biff.	
1729	C	232100		☾

Panel 1 — p. 127

Dies omiffi.		Anni		☾
1730	B	232200		
1731	A	232300		
1731	B	232400	Biff.	☾
1732	A	232500		
1733	u	232600		
1734	u	232700		☾
1734	u	232800	Biff.	
1735	t	232900		
1736	t	233000		☾
1737	f	233100		
1737	f	233200	Biff.	
1738	f	233300		☾
1739	r	233400		
1740	q	233500		
1740	r	233600	Biff.	☾
1741	q	233700		
1742	p	233800		

Dies omiffi.		Anni		☾
1743	p	233900		☾
1743	p	234000	Biff.	
1744	n	234100		
1745	m	234200		
1746	m	234300		☾ ☾
1746	m	234400	Biff.	
1747	l	234500		
1748	l [?]	234600		☾
1749	k	234700		
1749	k	234800	Biff.	
1750	k	234900		☾
1751	i	235000		
1752	h	235100		
1752	i	235200	Biff.	☾
1753	h	235300		
1754	g	235400		
1755	g	235500		☾
1755	g	235600	Biff.	
1756	f	235700		
1757	f	235800		☾
1758	e	235900		
1758	e	236000	Biff.	
1759	e	236100		☾
1760	d	236200		
1761	c	236300		
1761	d	236400	Biff.	☾
1762	c	236500		
1763	b	236600		
1764	a	236700		
1764	b	236800	Biff.	☾ ☾
1765	a	236900		

Dies omiffi.		Anni		☾
1766	P	237000		
1767	P	237100		☾
1767	P	237200	Biff.	
1768	N	237300		

Panel 2 — p. 127

Dies omiffi.		Anni		☾
1769	N	237400		☾
1770	M	237500		
1770	M	237600	Biff.	
1771	M	237700		☾
1772	H	237800		
1773	G	237900		
1773	H	238000	Biff.	☾
1774	G	238100		
1775	F	238200		
1776	F	238300		☾
1776	F	238400	Biff.	
1777	E	238500		
1778	E	238600		☾
1779	D	238700		
1779	D	238800	Biff.	
1780	D	238900		☾
1781	C	239000		
1782	B	239100		
1782	B	239200	Biff.	
1783	B	239300		☾ ☾
1784	A	239400		
1785	u	239500		
1785	A	239600	Biff.	☾
1786	u	239700		

Dies omiffi.		Anni		☾
1787	t	239800		
1788	t	239900		☾
1788	c [?]	240000	Biff.	
1789	f	240100		
1790	f	240200		☾
1791	r	240300		
1791	r	240400	Biff.	
1792	r	240500		☾
1793	q	240600		
1794	p	240700		
1794	q	240800	Biff.	☾
1795	p	240900		
1796	n	241000		
1797	n	241100	Biff.	
1797	n	241200		☾
1798	m	241300		
1799	m	241400		☾
1800	l	241500		
1800	l	241600	Biff.	
1801	k	241700		†
1802	k	241800		☾ ☾
1803	i	241900		
1803	i	242000	Biff.	
1804	i	242100		☾
1805	h	242200		
1806	g	242300		
1806	h	242400	Biff.	☾
1807	g	242500		

Dies omiffi.		Anni		☾
1808	f	242600		
1809	f	242700		☾
1809	f	242800	Biff.	
1810	e	242900		
1811	e	243000		☾
1812	d	243100		
1812	d	243200	Biff.	
1813	d	243300		☾
1814	c	243400		
1815	b	243500		
1815	c	243600	Biff.	☾
1816	b	243700		
1817	a	243800		
1818	a	243900		☾
1818	a	244000	Biff.	
1819	P	244100		
1820	N	244200		
1821	N	244300		☾ ☾
1821	N	244400	Biff.	
1822	M	244500		
1823	M	244600		☾
1824	H	244700		
1824	H	244800	Biff.	
1825	H	244900		☾
1826	G	245000		
1827	F	245100		
1827	G	245200	Biff.	☾
1828	F	245300		
1829	E	245400		
1830	E	245500		☾
1830	E	245600	Biff.	

Dies omiffi.		Anni		☾
1831	D	245700		
1832	D	245800		☾
1833	C	245900		
1833	C	246000	Biff.	
1834	C	246100		☾
1835	B	246200		
1836	A	246300		
1836	B	246400	Biff.	☾
1837	A	246500		
1838	u	246600		
1839	t	246700		
1839	u	246800	Biff.	☾ ☾
1840	t	246900		
1841	f	247000		
1842	f	247100		☾
1842	f	247200	Biff.	
1843	r	247300		
1844	r	247400		☾
1845	q	247500		
1845	q	247600	Biff.	
1846	q	247700		☾

Panel 1 — p. 128

Dies omiffi.		Anni		☾
1847	p	247800		
1848	n	247900		
1848	p	248000	Biff.	☾
1849	n	248100		
1850	m	248200		
1851	m	248300		☾
1851	m	248400	Biff.	

Dies omiffi.		Anni		☾
1852	l	248500		
1853	l	248600		☾
1854	k	248700		
1854	k	248800	Biff.	
1855	k	248900		☾
1856	i	249000		
1857	h	249100		
1857	h	249200	Biff.	
1858	h	249300		☾ ☾
1859	g	249400		
1860	f	249500		
1860	g	249600	Biff.	☾
1861	f	249700		
1862	e	249800		
1863	e	249900		☾
1863	e	250000	Biff.	
1864	d	250100		
1865	d	250200		☾
1866	c	250300		
1866	c	250400	Biff.	
1867	c	250500		☾
1868	b	250600		
1869	a	250700		
1869	b	250800	Biff.	☾
1870	a	250900		
1871	P	251000		
1872	P	251100		☾
1872	P	251200	Biff.	
1873	N	251300		
1874	N	251400		☾
1875	M	251500		

Dies omiffi.		Anni		☾
1875	M	251600	Biff.	
1876	H	251700		†
1877	H	251800		☾ ☾
1878	G	251900		
1878	G	252000	Biff.	
1879	G	252100		☾
1880	F	252200		
1881	E	252300		
1881	F	252400	Biff.	☾
1882	E	252500		
1883	D	252600		
1884	D	252700		☾
1884	D	252800	Biff.	
1885	C	252900		

Panel 2 — p. 128

Dies omiffi.		Anni		☾
1886	C	253000		☾
1887	B	253100		
1887	B	253200	Biff.	
1888	B	253300		☾
1889	A	253400		
1890	u	253500		
1890	A	253600	Biff.	☾
1891	u	253700		
1892	t	253800		
1893	t	253900		☾
1893	t	254000	Biff.	
1894	f	254100		
1895	r	254200		
1896	r	254300		☾ ☾

Dies omiffi.		Anni		☾
1896	r	254400	Biff.	
1897	q	254500		
1898	q	254600		☾
1899	p	254700		
1899	p	254800	Biff.	
1900	p	254900		☾
1901	n	255000		
1902	m	255100		
1902	n	255200	Biff.	☾
1903	m	255300		
1904	l	255400		
1905	l	255500		☾
1905	l	255600	Biff.	
1906	k	255700		
1907	k	255800		☾
1908	i	255900		
1908	i	256000	Biff.	
1909	i	256100		☾
1910	h	256200		
1911	g	256300		
1911	h	256400	Biff.	☾
1912	g	256500		
1913	f	256600		
1914	e	256700		
1914	f	256800	Biff.	☾ ☾
1915	e	256900		
1916	d	257000		
1917	d	257100		☾
1917	d	257200	Biff.	
1918	c	257300		
1919	c	257400		☾

Dies omiffi.		Anni		☾
1920	b	257500		
1920	b	257600	Biff.	
1921	b	257700		☾
1922	a	257800		
1923	P	257900		
1923	a	258000	Biff.	☾
1924	P	258100		

Panel 3 — p. 128

Dies omiffi.		Anni		☾
1925	N	258200		
1926	N	258300		☾
1926	N	258400	Biff.	
1927	M	258500		
1928	M	258600		☾
1929	H	258700		
1929	H	258800	Biff.	
1930	H	258900		☾
1931	G	259000		
1932	F	259100		
1932	F	259200	Biff.	
1933	F	259300		☾ ☾
1934	E	259400		
1935	D	259500		
1935	E	259600	Biff.	☾
1936	D	259700		
1937	C	259800		
1938	C	259900		☾
1938	C	260000	Biff.	
1939	B	260100		
1940	B	260200		☾

Dies omiffi.		Anni		☾
1941	A	260300		
1941	A	260400	Biff.	
1942	A	260500		☾
1943	u	260600		
1944	t	260700		
1944	u	260800	Biff.	☾
1945	t	260900		
1946	f	261000		
1947	f	261100		☾
1947	f	261200	Biff.	
1948	r	261300		
1949	r	261400		☾
1950	q	261500		
1950	q	261600	Biff.	
1951	p	261700		†
1952	p	261800		☾ ☾
1953	n	261900		
1953	n	262000	Biff.	
1954	n	262100		☾
1955	m	262200		
1956	l	262300		
1956	m	262400	Biff.	☾
1957	l	262500		
1958	k	262600		
1959	k	262700		☾
1959	k	262800	Biff.	
1960	i	262900		
1961	i	263000		☾
1962	h	263100		
1962	h	263200	Biff.	
1963	h	263300		☾

Table of the equation of the epacts, continued — years 263400–278900.

Panel 1

Dies omiffi.	Anni			
1964	g	263400		
1965	f	263500		
1965	g	263600	Biff.	☾
1966	f	263700		
1967	e	263800		
1968	e	263900		☾
1968	e	264000	Biff.	
1969	d	264100		
1970	c	264200		
1971	c	264300		☾ ☾
1971	c	264400	Biff.	
1972	b	264500		
1973	b	264600		☾
1974	a	264700		
1974	a	264800	Biff.	
1975	a	264900		☾
1976	P	265000		
1977	N	265100		
1977	P	265200	Biff.	☾
1978	N	265300		
1979	M	265400		
1980	M	265500		☾
1980	M	265600	Biff.	
1981	H	265700		
1982	H	265800		☾
1983	G	265900		
1983	G	266000	Biff.	
1984	G	266100		☾

Dies omiffi.		Anni		
1985	F	266200		
1986	E	266300		
1986	F	266400	Biff.	☾
1987	E	266500		
1988	D	266600		
1989	C	266700		
1989	D	266800	Biff.	☾ ☾
1990	C	266900		
1991	B	267000		
1992	B	267100		☾
1992	B	267200	Biff.	
1993	A	267300		
1994	A	267400		☾
1995	u	267500		
1995	u	267600	Biff.	
1996	u	267700		☾
1997	t	267800		
1998	f	267900		
1998	t	268000	Biff.	☾
1999	f	268100		
2000	r	268200		
2001	r	268300		☾
2001	r	268400	Biff.	
2002	q	268500		

Panel 2

Dies omiffi.		Anni		
2003	q	268600		☾
2004	p	268700		
2004	p	268800	Biff.	
2005	p	268900		☾

Dies omiffi.	Anni			
2006	n	269000		
2007	m	269100		
2007	m	269200	Biff.	
2008	m	269300		☾ ☾
2009	l	269400		
2010	k	269500		
2010	l	269600	Biff.	☾
2011	k	269700		
2012	i	269800		
2013	i	269900		☾
2013	i	270000	Biff.	
2014	h	270100		
2015	h	270200		☾
2016	g	270300		
2016	g	270400	Biff.	
2017	g	270500		☾
2018	f	270600		
2019	e	270700		
2019	f	270800	Biff.	☾
2020	e	270900		
2021	d	271000		
2022	d	271100		☾
2022	d	271200	Biff.	
2023	c	271300		
2024	c	271400		☾
2025	b	271500		
2025	b	271600	Biff.	
2026	a	271700		†
2027	a	271800		☾ ☾
2028	P	271900		
2028	P	272000	Biff.	

Dies omiffi.	Anni		
2029	P	272100	☾
2030	N	272200	
2031	M	272300	
2031	N	272400	Biff. ☾
2032	M	272500	
2033	H	272600	
2034	H	272700	☾
2034	H	272800	Biff.
2035	G	272900	
2036	G	273000	☾
2037	F	273100	
2037	F	273200	Biff.
2038	F	273300	☾
2039	E	273400	
2040	D	273500	
2040	E	273600	Biff. ☾
2041	D	273700	

Panel 3

Dies omiffi.	Anni		
2042	C	273800	
2043	C	273900	☾
2043	C	274000	Biff.
2044	B	274100	
2045	A	274200	
2046	A	274300	☾ ☾
2046	A	274400	Biff.
2047	u	274500	
2048	u	274600	☾
2049	t	274700	
2049	t	274800	Biff.

Dies omiffi.		Anni		
2050	t	274900		☾
2051	f	275000		
2052	r	275100		
2052	f	275200	Biff.	☾
2053	r	275300		
2054	q	275400		
2055	q	275500		☾
2055	q	275600	Biff.	
2056	p	275700		
2057	P	275800		☾
2058	n	275900		
2058	n	276000	Biff.	
2059	n	276100		☾
2060	m	276200		
2061	l	276300		
2061	m	276400	Biff.	☾
2062	l	276500		
2063	k	276600		
2064	i	276700		
2064	k	276800	Biff.	☾ ☾
2065	i	276900		
2066	h	277000		
2067	h	277100		☾
2067	h	277200	Biff.	
2068	g	277300		
2069	g	277400		☾
2070	f	277500		
2070	f	277600	Biff.	
2071	f	277700		☾
2072	e	277800		
2073	d	277900		

Dies omiffi.		Anni		
2073	e	278000	Biff.	☾
2074	d	278100		
2075	c	278200		
2076	c	278300		☾
2076	c	278400	Biff.	
2077	b	278500		
2078	b	278600		☾
2079	a	278700		
2079	a	278800	Biff.	
2080	a	278900		☾

Panel 1

Dies omiffi.		Anni		
2081	P	279000		
2082	N	279100		
2082	N	279200	Biff.	
2083	N	279300		☾ ☾
2084	M	279400		
2085	H	279500		
2085	M	279600	Biff.	☾
2086	H	279700		
2087	G	279800		
2088	G	279900		☾
2088	G	280000	Biff.	
2089	F	280100		
2090	F	280200		☾
2091	E	280300		
2091	E	280400	Biff.	
2092	E	280500		☾
2093	D	280600		
2094	C	280700		

Dies omiffi.	Anni			
2094	D	280800	Biff.	☾
2095	C	280900		
2096	B	281000		
2097	B	281100		☾
2097	B	281200	Biff.	
2098	A	281300		
2099	A	281400		☾
2100	u	281500		
2100	u	281600	Biff.	
2101	t	281700		†
2102	t	281800		☾ ☾
2103	f	281900		
2103	f	282000	Biff.	
2104	f	282100		☾
2105	r	282200		
2106	q	282300		
2106	r	282400	Biff.	☾
2107	q	282500		
2108	p	282600		
2109	p	282700		☾
2109	p	282800	Biff.	
2110	n	282900		
2111	n	283000		☾
2112	m	283100		
2112	m	283200	Biff.	
2113	m	283300		☾
2114	l	283400		
2115	k	283500		
2115	l	283600	Biff.	☾
2116	k	283700		
2117	i	283800		

Dies omiffi.		Anni	
2118	i	283900	☾
2118	i	284000	Biff.
2119	h	284100	

Panel 2

Dies omiffi.		Anni	
2120	g	284200	
2121	g	284300	☾ ☾
2121	g	284400	Biff.
2122	f	284500	
2123	f	284600	☾
2124	e	284700	
2124	e	284800	Biff.
2125	e	284900	☾
2126	d	285000	
2127	c	285100	
2127	d	285200	Biff. ☾
2128	c	285300	
2129	b	285400	
2130	b	285500	☾
2130	b	285600	Biff.
2131	a	285700	
2132	a	285800	☾
2133	P	285900	
2133	P	286000	Biff.
2134	P	286100	☾
2135	N	286200	
2136	M	286300	
2136	N	286400	Biff. ☾
2137	M	286500	
2138	H	286600	

Dies omiffi.	Anni			
2139	G	286700		
2139	H	286800	Biff.	☾ ☾
2140	G	286900		
2141	F	287000		
2142	F	287100		☾
2142	F	287200	Biff.	
2143	E	287300		
2144	E	287400		☾
2145	D	287500		
2145	D	287600	Biff.	
2146	D	287700		☾
2147	C	287800		
2148	B	287900		
2148	C	288000	Biff.	☾
2149	B	288100		
2150	A	288200		
2151	A	288300		☾
2151	A	288400	Biff.	
2152	u	288500		
2153	u	288600		☾
2154	t	288700		
2154	t	288800	Biff.	
2155	t	288900		☾
2156	f	289000		
2157	r	289100		
2157	r	289200	Biff.	
2158	r	289300		☾ ☾

Panel 3

Dies omiffi.	Anni			
2159	q	289400		

Dies omiffi.		Anni		
2160	p	289500		
2160	q	289600	Biff.	☾
2161	p	289700		
2162	n	289800		
2163	n	289900		☾
2163	n	290000	Biff.	
2164	m	290100		
2165	m	290200		☾
2166	l	290300		
2166	l	290400	Biff.	
2167	l	290500		☾
2168	k	290600		
2169	i	290700		
2169	k	290800	Biff.	☾
2170	i	290900		
2171	h	291000		
2172	h	291100		☾
2172	h	291200	Biff.	
2173	g	291300		
2174	g	291400		☾
2175	f	291500		
2175	f	291600	Biff.	
2176	e	291700		†
2177	e	291800		☾ ☾
2178	d	291900		
2178	d	292000	Biff.	
2179	d	292100		☾
2180	c	292200		
2181	b	292300		
2181	c	292400	Biff.	☾
2182	b	292500		

Dies omiffi.		Anni		
2183	a	292600		
2184	a	292700		☾
2184	a	292800	Biff.	
2185	P	292900		
2186	P	293000		☾
2187	N	293100		
2187	N	293200	Biff.	
2188	N	293300		☾
2189	M	293400		
2190	H	293500		
2190	M	293600	Biff.	☾
2191	H	293700		
2192	G	293800		
2193	G	293900		☾
2193	G	294000	Biff.	
2194	F	294100		
2195	E	294200		
2196	E	294300		☾ ☾
2196	E	294400	Biff.	
2197	D	294500		

Panel 1

Dies omiffi.		Anni		
2198	D	294600		☾
2199	C	294700		
2192	C	294800	Biff.	
2200	C	294900		☾
2201	B	295000		
2202	A	295100		
2202	B	295200	Biff.	☾
2203	A	295300		

Dies omiffi.		Anni		
2204	u	295400		
2205	u	295500		☾
2205	u	295600	Biff.	
2206	t	295700		
2207	t	295800		☾
2208	f	295900		
2208	f	296000	Biff.	
2209	f	296100		☾
2210	r	296200		
2211	q	296300		
2211	r	296400	Biff.	☾
2212	q	296500		
2213	p	296600		
2214	n	296700		
2214	p	296800	Biff.	☾ ☾
2215	n	296900		
2216	m	297000		
2217	m	297100		☾
2217	m	297200	Biff.	
2218	l	297300		
2219	l	297400		☾
2220	k	297500		
2220	k	297600	Biff.	
2221	k	297700		☾

Panel 2

Dies omiffi.		Anni		
2222	i	297800		
2223	h	297900		
2223	i	298000	Biff.	☾
2224	h	298100		

Dies omiffi.		Anni		
2225	g	298200		
2226	g	298300		☾
2226	g	298400	Biff.	
2227	f	298500		
2228	f	298600		☾
2229	e	298700		
2229	e	298800	Biff.	
2230	e	298900		☾
2231	d	299000		
2232	c	299100		
2232	c	299200	Biff.	
2233	c	299300		☾ ☾
2234	b	299400		
2235	a	299500		
2235	b	299600	Biff.	☾
2236	a	299700		
2237	P	299800		
2238	P	299900		☾
2238	P	300000	Biff.	
2239	N	300100		
2240	N	300200		☾
2241	M	300300		
2241	M	300400	Biff.	
2242	M	300500		☾
2243	H	300600		
2244	G	300700		
2244	H	300800	Biff.	☾
2245	G	300900		

Panel 3

Dies omiffi.	Anni		
2246	F	301000	
2247	F	301100	☾
2247	F	301200	Biff.
2248	E	301300	
2249	E	301400	☾
2250	D	301500	
2250	D	301600	Biff.
2251	C	301700	†
2252	C	301800	☾ ☾
2253	B	301900	
2253	B	302000	Biff.
2254	B	302100	☾
2255	A	302200	
2256	u	302300	
2256	A	302400	Biff. ☾
2257	u	302500	
2258	t	302600	
2259	t	302700	☾
2259	t	302800	Biff.
2260	f	302900	
2261	f	303000	☾
2262	r	303100	
2262	r	303200	Biff.
2263	r	303300	☾

And so on to infinity, keeping from the year 301700 the same order that has been kept from the year 1700, as you see done here.

[Margin: A threefold rule, drawn from the intention of the author of the Calendar, for continuing the table of the equation of the epacts to infinity.]

I. WHEN the intercalary day is omitted in some centesimal year and the Moon needs no equation — that is, when the solar year alone is to be equated —

descend in the expanded table [tabula expansa] to the next lower line of epacts, and set that line's letter against that centesimal year.

II. WHEN, by contrast, the intercalary day is *not* omitted in some centesimal year but the Moon does need an equation — that is, when the lunar year alone is to be equated — ascend in the expanded table to the next higher line of epacts, and assign that line's letter to that centesimal year.

III. WHEN, finally, both the intercalary day is omitted in some centesimal year *and* the Moon needs an equation; or else neither the intercalary day is omitted nor does the Moon require an equation — that is, when both years are to be equated, or neither — stay on the same line of epacts in the expanded table, and prefix to that centesimal year the same letter that was attached to the preceding centesimal year.

You can see that all these rules have been observed in the table of equation just given. Every centesimal year always has prefixed to it the letter that identifies the line of epacts in the expanded table then to be taken, according as one must descend, ascend, or stay on the same line — exactly as this threefold rule teaches. Moreover, to make the scheme of the equation easier to follow, we have added this sign, C , to those centesimal years in which the Moon calls for an equation: single at every third centesimal year, but double at every fourth centesimal year, into which the equation is deferred from the preceding three-hundredth year. That deferral occurs, as we said, at intervals of 2400 years after the year 1800, when such a postponement of the equation was first made. For then the equation is deferred to the year 4300 from the year 4200, even though 4200 is the third centesimal year from the last lunar equation, made in the year 3900. The same must be done 2400 years after the year 4300 — that is, in the year 6700, from which the equation is deferred to the year 6800. Likewise 2400 years after the year 6800, that is, in the year 9200: for then the equation is to be applied not in 9200 but in 9300. And so with the rest.

All of this, to be sure, has been worked out according to the intention of the author of the Calendar. But when we examined this table of equation more carefully, we found that after some thousands of years it no longer yields new moons [nouilunia] agreeing with the mean celestial new moons, but ones earlier than these. We shall therefore correct the table of equation in the following chapter, Num. 10, and at the same time disclose the reason for its error. And so after the year 8200 this table of equation is not to be used for finding the epact; the one we shall construct in chap. 12, Num. 10 is to be taken instead.

[Margin: The epact is not to be found by the preceding table of equation after the year 8200.]

IN the same table of equation we have set down, on the left, the days that will have been dropped up to each centesimal year, over and above the ten dropped in 1582, the year of the correction. We need this quite often in computing the mean conjunctions and oppositions of the Moon. Thus you see, for example, that by the year 70700 the omitted bissextiles are 519; and adding the 10 days removed in the year of the correction, the days dropped by then come in all to 529. And so with the rest.

ALTHOUGH the letters of the alphabet in this table of equation seem to observe no order, they do nevertheless come round again in a circle, like a Cycle, over a span of 300000 years. The table of equation of the epacts, extended over 300000 years — that is, over 3000 centesimal years — beginning from the year 1700 (the year in which the capital letter C is first used in place of the capital letter D) and running to the year 301600 inclusive, as has been done in ours, would therefore hold good in perpetuity, provided the world lasted for ever and the method of equating both years, the solar and the lunar, prescribed by the author of the Calendar, never needed emendation but always answered exactly to the celestial motions.

We shall make this clear as follows. After 10000 years have elapsed from the year 1700 — that is, after 100 centesimal years, namely in the year 11700 — exactly the same pattern of letters returns, though not the same letters. For just as, after the year 1600, one and the same letter C is set against the two years 1700 and 1800; the same letter B against the three years 1900, 2000, 2100; the letter A against the year 2200; the letter u against the year 2300; the letter A repeated against the year 2400; the letter u against the year 2500; and one and the same letter t written against the three years 2600, 2700, 2800, and so on — exactly the same thing happens after any 10000 years have elapsed. For after the year 11600, the same letter i is written against the two years 11700 and 11800; the same letter h against the three years 11900, 12000, 12100; the letter g against the year 12200; the letter f against the year 12300; the letter g repeated against the year 12400; the letter f against the year 12500; and one and the same letter e set before the three years 12600, 12700, 12800, and so on. The very same thing is seen after 10000 years have elapsed from the year 11700: in the year 21700 the same pattern comes back again. So too in the year 31700, that is, 10000 years after the year 21700; and again in the year 41700, that is, 10000 years after the year 31700 as well. The same holds for the rest. All of this is evident from the years set out below, which

are excerpted from the table of equation above — although the same is true likewise in every span of 10000 years, from whatever centesimal year one begins after the year 1600. Before that year the proportion does not appear, since the equation of neither year was then applied. Moreover, in the table of equation above, against the years from which the series of 10000 years begin after the year 1600, we have placed this sign †, on the right, between the marks ☾ and ☾☾.

[Margin: That after 10000 years the letters in the table of equation of the epacts advance in the same proportion, and why.]

THE REASON for this is that 10000 years contain, exactly four times over, the twenty-five centesimal years into which the lunar equation owed to the preceding centesimal year is deferred; and therefore the lunar equations advance in one span of 10000 years just as they do in any other. Since, then, the bissextile centesimal years also stand in the same way in all spans of this kind — as is plain from the two small tables set beside this passage, in which we have placed both the marks of the lunar equation and those of the bissextile years, excerpted from that same table of equation above — it must follow that the letters of the equation advance in the same proportion in every span of 10000 years.

Anni		Anni		Anni		Anni		Anni		
C	1700	i	11700	G	21700	n	31700	P	41700	
C	1800	i	11800	G	21800	n	31800	P	41800	☾☾
B	1900	h	11900	F	21900	m	31900	N	41900	
B	2000	h	12000	F	22000	m	32000	N	42000	Biff.
B	2100	h	12100	F	22100	m	32100	N	42100	☾
A	2200	g	12200	E	22200	l	32200	M	42200	
u	2300	f	12300	D	22300	k	32300	H	42300	
A	2400	g	12400	E	22400	l	32400	M	42400	Biff. ☾
u	2500	f	12500	D	22500	k	32500	H	42500	
t	2600	e	12600	C	22600	i	32600	G	42600	
t	2700	e	12700	C	22700	i	32700	G	42700	☾
t	2800	e	12800	C	22800	i	32800	G	42800	Biff.

The same is seen in these years, even though they do not begin from the years 1700, 11700, etc., but from the years 2200, 12200, etc.

	Anni		Anni		Anni		Anni		Anni			
A	2200	g	12200	E	22200	l	32200	M	42200			
u	2300	f	12300	D	22300	k	32300	H	42300			
A	2400	g	12400	E	22400	l	32400	M	42400	Biff.		☾
u	2500	f	12500	D	22500	k	32500	H	42500			
t	2600	e	12600	C	22600	i	32600	G	42600			
t	2700	e	12700	C	22700	i	32700	G	42700			☾
t	2800	e	12800	C	22800	i	32800	G	42800	Biff.		
f	2900	d	12900	B	22900	h	32900	F	42900			
f	3000	d	13000	B	23000	h	33000	F	43000			☾
r	3100	c	13100	A	23100	g	33100	E	43100			
r	3200	c	13200	A	23200	g	33200	E	43200	Biff.		
r	3300	c	13300	A	23300	g	33300	E	43300			☾

AND SO the whole labour of constructing the table of equation above lies in the first span of 10000 years. For if from the year 11700 — that is, once 10000 years have elapsed from the year 1700 — the same pattern of letters is repeated (though beginning from the minuscule letter i, which falls in its own order on the year 11700), together with the same marks of the lunar equation and of the bissextile centesimal years that was observed from the year 1700 to the year 11600 inclusive; and if the same is then done after each further set of 10000 years, until 300000 years after the year 1700 are complete — the whole table of equation will have been constructed, embracing every variation.

[Margin: The whole labour of constructing the table of equation above lies in the first span of 10000 years.]

FOR after 300000 years not only is the same pattern of the letters of the equation preserved, but the very same letters return in a circle — which will be clear from what follows. Since, once 10000 years have elapsed from the year 1700, a change of 43 letters has been made — that is (casting away the whole Cycle of 30 letters of the expanded table) of 13 letters, beginning from the capital letter C set before the year 1700 and running to the minuscule letter k inclusive, attached to the year 11600 — there will be in the second span of 10000 years a change of 26 letters, beginning from that same capital letter C, that is, of a further 13 letters, from the minuscule letter i to the capital H inclusive. In the third span the change is 39, that is (casting away 30) 9. In the fourth, 22. In the fifth, 35, that is (casting away 30) 5. In the sixth, 18. In the seventh, 31, that is (casting away 30) 1. In the

eighth, 14. In the ninth, 27. In the tenth, 40, that is (casting away 30) 10. In the eleventh, 23. In the twelfth, 36, or 6. In the thirteenth, 19. In the fourteenth, 32, or 2. In the fifteenth, 15. In the sixteenth, 28. In the seventeenth, 41, or 11. In the eighteenth, 24. In the nineteenth, 37, or 7. In the twentieth, 20. In the twenty-first, 33, that is, 3. In the twenty-second, 16. In the twenty-third, 29. In the twenty-fourth, 42, or 12. In the twenty-fifth, 25. In the twenty-sixth, 38, or 8. In the twenty-seventh, 21. In the twenty-eighth, 34, or 4. In the twenty-ninth, 17. And in the thirtieth, 30, or 0. Since, I say, in every span of 10000 years a change of 13 letters occurs, so that in the thirtieth span the change amounts to all 30 letters of the expanded table, it follows that once 30 spans of 10000 years have passed — that is, once 300000 years have elapsed — exactly the same letters return as before, and in the same order. The table of equation of the epacts above is therefore contained within a Cycle of 300000 years.

Thus you see in the table of equation above that against the year 301700 — which is 300000 years from the year 1700, where we begin the order of the equation — the capital letter C is again set, the same letter that was set before the year 1700; and this is found at no other centesimal year marked with the sign †. And so at the year 301700 and the years following, the same letters will be repeated, in the same order in which they stand at the year 1700 and the years following.

[Margin: That the table of equation above is contained within a cycle of 300000 years, and why.]

11 IT MUST NOT, however, be passed over at this point that, just as we deferred the lunar equation, after any 2400 years, to the following centesimal year — on account of those $12\frac{1}{2}$ years omitted in each span of 300 years, which in each 2400 years accumulate to 100 years — so likewise the same equation is to be thrown forward, after any 481436 years, into the next following centesimal year, on account of the 23 days and 17 hours by which we anticipate it in each span of $312\frac{1}{2}$ years; for those 23 days and 17 hours accumulate, over a span of 481436 years, to 100 years, as we wrote in chapter 8, Number 4. But since this stretch of time exceeds our whole Cycle of equation of 300000 years, let us leave that care to our descendants, who will be alive in those ages — if indeed the world lasts so long — especially since no uniform equation can agree with the celestial new moons for so long a time. I have said this so that no one should be troubled on account of those 23 days and 17 hours which we have neglected in the equation; for we laid it down that the Moon runs ahead by one day in $312\frac{1}{2}$ years, whereas more accurately she anticipates it by 312 years, 6 months, 23 days and 17 hours, as we showed in chapter 8, Num. 4.

[Margin: What is to be done about the equation of the Moon after 481436 years.]

CAPVT XII.

Inuentio aurei numeri, & Epactæ quolibet anno proposito: Item emendatio tabulæ æquationis præcedenti capite ex sententia auctoris Calendarij descriptæ.

Finding the golden number and the epact for any proposed year; together with the correction of the table of equation set out in the preceding chapter according to the intention of the author of the Calendar.

I

THE nineteen-year CYCLE of the golden number is a revolution of the number 19, from j up to 19; and when that revolution is complete, it returns again to unity. For example: in the year 1596 the number of the nineteen-year Cycle, which is called the golden number, is 1. In the following year, 1597, it is 2. In 1598 it is 3; and so on in the succeeding years, always one more, up to 19 — which golden number will fall in the year 1614. After that one must return again to unity, so that in the year 1615 the golden number is once more j, in 1616 it is 2, and so on. This Cycle of the golden number contains 19 years because, after 19 solar years have elapsed, the new moons return to the same days of the months — not altogether precisely, but somewhat earlier by some fraction of a day, as we showed above in chapter 8.

[Margin: What the cycle of the golden number is.]

EVERY year of the golden number ends at the close of the month of December, and at the beginning of January of the following year another year of the golden number takes its start — just as happens with the years of the Lord, which always end in the month of December and take their start from January. Thus in the year of the Lord 1598 the year of the nineteen-year Cycle, which is called the golden number, is 3, and it ends together with the year of the Lord 1598 itself in the month of December. But in the month of January another year of the Lord begins, namely 1599; and in that same month of January another year of the golden number is likewise taken up, namely 4. And so one must proceed in the other years, until the number 19 is completed, from which one must return again to unity — and in this way perpetually.

[Margin: The golden number of every year begins in January.]

2 ALTHOUGH all 19 golden numbers, distributed through the days of the Calendar, cannot indicate the new moons perpetually, or even for a long time, as we said in chapter 9 — and the epacts have been adopted in their place — it is nevertheless altogether necessary to know the golden number of each year, so that by means of it the epact of that same year may be found. Besides the rules handed down in Canon 1 of the perpetual Gregorian Calendar, which we set out at the beginning of this work, we shall here provide a very convenient table from which the golden number of any proposed year may be extracted, beginning from the year of the Lord 1, in which the golden number was ij. The construction of the table is as follows. Let all 19 golden numbers be set out in order in a little table, beginning from the golden number ij. Then let there be described in another table the years of the Lord beginning from 1 and advancing by the continual addition of 19, as far as one pleases. For to these years corresponds the golden

number ij of the first cell. Therefore, when you are about to find the golden number of any year, look for that year among the years of the Lord; and when you have found it, you will say that in that year the golden number is ij. But if the proposed year is not found there, take the year next below it, assign that to the first cell, the following year to the second cell, the next after that to the third, and so on, until you reach the proposed year. For the golden number of the cell into which the proposed year falls will be the one sought.

For example: let the golden number of the year 147 be sought. Having found among the years of the Lord the year 134, the next below it, assign that year to the first cell, the year 135 to the second, 136 to the third, and so on. The proposed year 147 will end at cell 14, in which the golden number xv is written, and that is the number owed to the year 147. Again, let the golden number of the year 5383 be proposed for finding. Having found the next lower number, 5378, count from it in the cells of the golden numbers up to 5383, and you will fall on the golden number vij, which fits the proposed year 5383. Further, let the year 5416 be proposed: since it is found among the years of the Lord, you will say that the golden number ij belongs to it. Again, let the year 6060 be proposed. Having found the next lower, 6043, count from it in the cells of the golden numbers up to 6060, and you will fall on the cell of the golden number xix, which answers to the year 6060. Lastly, let the year 4466 be given: since it is found among the years of the Lord, you will say that the golden number is ij, which stands in the first cell. For every year described in the table has the golden number ij of the first cell, as we said. And the same reasoning holds in the remaining cases.

Tabella aureorum numerorum. [Table of the golden numbers.]

ij	iiij	iiiij	v	vij	viiij	i	x	x	xij	xiiij	x
ij	iiij	iiiij	v	j	vij	viiij	x	x	j	xij	v
xvj	xvij	xviiij	xix	j							

Anni Domini, quibus primæ cellulæ aureus numerus ij, congruit. [The years of the Lord to which the golden number ij of the first cell belongs.]

1	20	39	58	76	96	115	134	153	172	191	210
229	248	267	286	305	324	343	362	381	400	419	438
457	476	495	514	533	552	571	590	609	628	647	666
685	704	723	742	761	780	799	818	837	856	875	894
913	932	951	970	989	1008	1027	1046	1065	1084	1003	1122
1141	1160	1179	1198	1217	1236	1255	1274	1293	1312	1331	1350
1369	1388	1407	1426	1445	1464	1483	1502	1521	1540	1559	1578
1597	1616	1635	1654	1673	1692	1711	1730	1749	1768	1787	1806
1825	1844	1863	1882	1901	1920	1939	1958	1977	1996	2015	2034
2053	2072	2091	2110	2129	2148	2167	2186	2205	2224	2243	2262
2281	2300	2219	2338	2357	2376	2365	2414	2433	2452	2471	2490
2509	2528	2547	2566	2586	2604	2623	2642	2661	2680	2699	2718
2737	2756	2775	2794	2813	2832	2851	2870	2889	2908	2928	2946
2965	2984	3003	3022	3041	3060	3079	3098	3117	3136	3155	3174
3193	3212	3231	3250	3269	3288	3307	3326	3305	3364	3383	3402
3421	3440	3459	3478	3497	3516	3535	3554	3573	3592	3611	3630
3649	3668	3687	3706	3725	3744	3763	3782	3801	3820	3839	3858
3877	3896	3915	3934	3953	3972	3991	4010	4029	4048	4067	4086
4105	4124	4143	4162	4181	4200	4219	4238	4257	4276	4295	4314
4333	4352	4371	4390	4409	4428	4447	4466	4485	4504	4523	4542
4561	4580	4599	4618	4637	4656	4675	4694	4713	4732	4751	4770
4789	4808	4827	4846	4865	4884	4903	4922	4941	4960	4979	4998
5017	5036	5055	5074	5093	5112	5131	5150	5169	5188	5207	5226
5245	5264	5283	5302	5321	5340	5359	5378	5397	5416	5435	5454
5473	5492	5511	5530	5549	5568	5587	5606	5625	5644	5663	5682

1	20	39	58	76	96	115	134	153	172	191	210
5701	5720	5739	5758	5777	5796	5815	5834	5853	5872	5891	5910
5929	5948	5967	5986	6005	6024	6043	6062	6081	6100	6119	6138
6157	6176	6195	6214	6233	6252	6271	6290	6309	6328	6347	6366
6385	6404	6423	6442	6461	6480	6499	6518	6537	6556	6575	6594
6613	6632	6651	6670	6689	6708	6727	6746	6765	6784	6803	6822
6841	6860	6879	6898	6917	6936	6955	6974	6993	7012	7031	7050
7069	7088	7107	7126	7145	7164	7183	7202	7221	7240	7259	7278
7297	7316	7335	7354	7373	7392	7411	7430	7449	7468	7487	7506
7525	7544	7563	7582	7601	6620	7639	7658	7677	7696	7715	7734
7753	7772	7791	7810	7829	7848	7867	7886	7905	7924	7943	7962
8981	8000	8019	8038	8057	8076	8095	8114	8133	8152	8171	8190

(Continuation of the table of years of the Lord agreeing with each golden number, begun on the preceding page; the grid runs left to right and then down, each entry exceeding the one before it by 19.)

820	822	824	8266	828	830	832	834	836	838	839	841
9	8	7		5	4	3	2	1	0	9	8
843	845	847	8494	851	853	855	857	858	860	862	864
7	6	5		3	2	1	0	9	8	7	6
866	868	870	8722	874	876	877	879	881	883	885	887
5	4	3		1	0	9	8	7	6	5	4
889	891	893	8950	896	898	900	902	904	906	908	910
3	2	1		9	8	7	6	5	4	3	2
912	914	915	9178	919	921	923	925	927	929	931	933
1	0	9		7	6	5	4	3	2	1	0
934	936	938	9406	942	944	946	948	950	952	953	955
9	8	7		5	4	3	2	1	0	9	8
957	959	961	9634	965	967	969	971	972	974	976	978
7	6	5		3	2	1	0	9	8	7	6
980	982	984	9862	988	990	991	993	995	997	999	100
5	4	3		1	0	9	8	7	6	5	14
100	100	100	1009[0?]	101	101	101	101	101	102	102	102

33	52	71		09	28	47	66	85	04	23	42
102	102	102	10318	103	103	103	103	104	104	104	104
61	80	99		37	56	75	94	13	32	51	70
104	105	105	10546	105	105	106	106	106	106	106	106
89	08	27		65	84	03	22	41	60	79	98
107	107	107	10774	107	108	108	108	108	109	109	109
17	36	55		93	12	31	50	88	07	26	45
109	109	119	11021	110	110	110	110	111	111	111	111
64	83	02		40	59	78	97	16	35	54	73
111	112	112	11249	112	112	113	113	115	113	113	114
92	11	30		68	87	06	25	44	63	82	01
114	114	114	11477	114	115	115	115	115	115	116	116
20	39	58		96	15	34	53	72	91	10	29
116	116	116	11705	117	117	117	117	118	118	118	118
48	67	86		24	43	62	81	00	19	38	57
118	118	119	11933	119	119	119	120	120	120	120	120
76	95	14		52	71	90	09	28	47	66	85
121	121	121	12161	121	121	122	122	122	122	122	123
04	23	42		80	99	18	37	56	75	94	13
123	123	123	12389	124	124	124	124	124	125	125	125
32	51	70		08	27	46	65	84	03	22	41
125	125	125	12617	126	126	126	126	127	127	127	127
60	79	98		36	55	74	93	12	31	50	69
127	128	128	12845	128	128	129	129	129	129	129	129
88	07	26		64	83	02	21	40	59	78	97
130	130	130	13073	130	131	131	131	131	131	132	132
16	35	54		92	11	30	49	68	87	06	25
132	132	132	13301	133	133	133	133	133	134	134	134
44	63	82		20	39	58	77	96	15	34	53
134	134	135	13529	135	135	135	136	136	136	136	136
72	91	10		48	67	86	05	24	43	62	81
137	137	137	13757	137	137	138	138	138	138	138	139
00	19	38		76	95	14	33	52	71	90	09
139	139	139	13985	140	140	140	140	140	140	141	141

28	47	66		04	23	42	61	80	99	18	37
141	141	141	14213	142	142	142	142	143	143	143	143
56	75	94		32	51	70	89	08	27	46	65
143	144	144	14441	144	144	144	145	145	145	145	145
84	03	22		60	79	98	17	36	55	74	93
146	146	146	14669	146	147	147	147	147	147	148	148
12	31	50		88	07	26	45	64	83	02	21
148	148	148	14497	149	149	149	149	149	150	150	150
40	59	78		16	35	54	73	92	11	30	49
150	150	151	15125	151	151	151	152	152	152	152	152
68	87	06		44	63	82	01	20	39	58	77
152	153	153	15353	153	153	154	154	154	154	154	155
96	15	34		72	91	10	29	48	67	86	05

3. It will perhaps be more convenient to lay this table out by hundreds of years, in the following manner:

Anni Domini per 100. collecti, quibus Aurei numeri in finistro latere descripti congruunt. — *Years of the Lord collected by hundreds, with which the golden numbers set down on the left-hand side agree.*

[illegible]

G	xij	600 0	250 0	440 0	630 0	820 0	1010 0	1200 0	1390 0	1580 0	1770 0	1960 0
H	xvij	700 0	260 0	450 0	640 0	830 0	1020 0	1210 0	1400 0	1590 0	1780 0	1970 0
I	iiij	800 0	270 0	460 0	650 0	840 0	1030 0	1220 0	1410 0	1600 0	1790 0	1980 0
K	viiij	900 0	280 0	470 0	660 0	850 0	1040 0	1230 0	1420 0	1610 0	1800 0	1990 0
L	xiiij	100 0	290 0	480 0	670 0	860 0	1050 0	1240 0	1430 0	1620 0	1810 0	2000 0
M	xviiij	110 0	300 0	490 0	680 0	870 0	1060 0	1250 0	1440 0	1630 0	1820 0	2010 0
N	iiiij	120 0	310 0	500 0	690 0	880 0	1070 0	1260 0	1450 0	1640 0	1830 0	2020 0
O	ix	130 0	320 0	510 0	700 0	890 0	1080 0	1270 0	1460 0	1650 0	1840 0	2030 0
P	xiiiij	140 0	330 0	520 0	710 0	900 0	1090 0	1280 0	1470 0	1660 0	1850 0	2040 0
Q	xix	150 0	340 0	530 0	720 0	910 0	1100 0	1290 0	1480 0	1670 0	1860 0	2050 0
R	v	160 0	350 0	540 0	730 0	920 0	1110 0	1300 0	1490 0	1680 0	1870 0	2060 0
S	x	170 0	360 0	550 0	740 0	930 0	1120 0	1310 0	1500 0	1690 0	1880 0	2070 0
T	xv	180 0	370 0	560 0	750 0	940 0	1130 0	1320 0	1510 0	1700 0	1890 0	2080 0

A j	2090 0	2280 0	2470 0	2660 0	2850 0	3040 0	3230 0	3420 0	3610 0	3800 0	3990 0
B vj	2100 0	2290 0	2480 0	2670 0	2860 0	3050 0	3240 0	3430 0	3620 0	3810 0	4000 0

C	xj	2110 0	2300 0	2490 0	2680 0	2870 0	3060 0	3250 0	3440 0	3630 0	3820 0	4010 0
D	xvj	2120 0	2310 0	2500 0	2690 0	2880 0	3070 0	3260 0	3450 0	3640 0	3830 0	4020 0
E	ij	2130 0	2320 0	2510 0	2700 0	2890 0	3080 0	3270 0	3460 0	3650 0	3840 0	4030 0
F	vij	2140 0	2330 0	2520 0	2710 0	2900 0	3090 0	3280 0	3470 0	3660 0	3850 0	4040 0
G	xij	2150 0	2340 0	2530 0	2720 0	2910 0	3100 0	3290 0	3480 0	3670 0	3860 0	4050 0
H	xvij	2160 0	2350 0	2540 0	2730 0	2920 0	3110 0	3300 0	3490 0	3680 0	3870 0	4060 0
I	iiij	2170 0	2360 0	2550 0	2740 0	2930 0	3120 0	3310 0	3500 0	3690 0	3880 0	4070 0
K	viiij	2180 0	2370 0	2560 0	2750 0	2940 0	3130 0	3320 0	3510 0	3700 0	3890 0	4080 0
L	xiiij	2190 0	2380 0	2570 0	2760 0	2950 0	3140 0	3330 0	3520 0	3710 0	3900 0	4090 0
M	xviiij	2200 0	2390 0	2580 0	2770 0	2960 0	3150 0	3340 0	3530 0	3720 0	3910 0	4100 0
N	iiiij	2210 0	2400 0	2590 0	2780 0	2970 0	3160 0	3350 0	3540 0	3730 0	3920 0	4110 0
O	ix	2220 0	2410 0	2600 0	2790 0	2980 0	3170 0	3360 0	3550 0	3740 0	3930 0	4120 0
P	xiiiij	2230 0	2420 0	2610 0	2800 0	2990 0	3180 0	3370 0	3560 0	3750 0	3940 0	4130 0
Q	xix	2240 0	2430 0	2620 0	2810 0	3000 0	3190 0	3380 0	3570 0	3760 0	3950 0	4140 0
R	v	2250 0	2440 0	2630 0	2820 0	3010 0	3200 0	3390 0	3580 0	3770 0	3960 0	4150 0
S	x	2260 0	2450 0	2640 0	2830 0	3020 0	3210 0	3400 0	3590 0	3780 0	3970 0	4160 0
T	xv	2270 0	2460 0	2650 0	2840 0	3030 0	3220 0	3410 0	3600 0	3790 0	3980 0	4170 0

**Anni Domini per 100. collecti, quibus Aurei numeri in finifstro latere
descripti congruunt.** — *Years of the Lord collected by hundreds, with which the
golden numbers set down on the left-hand side agree.*

A j	4180	4370	4560	4750	4940	5130	5320	5510	5700	5890	6080
	0	0	0	0	0	0	0	0	0	0	0
B vj	4190	4380	4570	4760	4950	5140	5330	5520	5710	5900	6090
	0	0	0	0	0	0	0	0	0	0	0
C xj	4200	4390	4580	4770	4960	5150	5340	5530	5720	5910	6100
	0	0	0	0	0	0	0	0	0	0	0
D xvj	4210	4400	4590	4780	4970	5160	5350	5540	5730	5920	6110
	0	0	0	0	0	0	0	0	0	0	0
E ij	4220	4410	4600	4790	4980	5170	5360	5550	5740	5930	6120
	0	0	0	0	0	0	0	0	0	0	0
F vij	4230	4420	4610	4800	4990	5180	5370	5560	5750	5940	6130
	0	0	0	0	0	0	0	0	0	0	0
G xij	4240	4430	4620	4810	5000	5190	5380	5570	5760	5950	6140
	0	0	0	0	0	0	0	0	0	0	0
H xvij	4250	4440	4630	4820	5010	5200	5390	5580	5770	5960	6150
	0	0	0	0	0	0	0	0	0	0	0
I iij	4260	4450	4640	4830	5020	5210	5400	5590	5780	5970	6160
	0	0	0	0	0	0	0	0	0	0	0
K viij	4270	4460	4650	4840	5030	5220	5410	5600	5790	5980	6170
	0	0	0	0	0	0	0	0	0	0	0
L xij	4280	4470	4660	4850	5040	5230	5420	5610	5800	5990	6180
	0	0	0	0	0	0	0	0	0	0	0
M xvij	4290	4480	4670	4860	5050	5240	5430	5620	5810	6000	6190
	0	0	0	0	0	0	0	0	0	0	0
N iij	4300	4490	4680	4870	5060	5250	5440	5630	5820	6010	6200
	0	0	0	0	0	0	0	0	0	0	0
O ix	4310	4500	4690	4880	5070	5260	5450	5640	5830	6020	6210
	0	0	0	0	0	0	0	0	0	0	0
P xiiij	4320	4510	4700	4890	5080	5270	5460	5650	5840	6030	6220
	0	0	0	0	0	0	0	0	0	0	0
Q xix	4330	4520	4710	4900	5090	5280	5470	5660	5850	6040	6230

	0	0	0	0	0	0	0	0	0	0	0
R v	4340	4530	4720	4910	5100	5290	5480	5670	5860	6050	6240
	0	0	0	0	0	0	0	0	0	0	0
S x	4350	4540	4730	4920	5110	5300	5490	5680	5870	6060	6250
	0	0	0	0	0	0	0	0	0	0	0
T xv	4360	4550	4740	4930	5120	5310	5500	5690	5880	6070	6260
	0	0	0	0	0	0	0	0	0	0	0

(Second block on the same page, continuing the same table; the caption is not repeated.)

A j	627	646	66500	684	703	722	741	760	779	79800	817
	00	00		00	00	00	00	00	00		00
B vj	628	647	66600	685	704	723	742	761	780	79900	818
	00	00		00	00	00	00	00	00		00
C xj	629	648	66700	686	705	724	743	762	781	80000	819
	00	00		00	00	00	00	00	00		00
D xvj	630	649	66800	687	706	725	744	763	782	80100	820
	00	00		00	00	00	00	00	00		00
E ij	631	650	66900	688	707	726	745	764	783	80200	821
	00	00		00	00	00	00	00	00		00
F vij	632	651	67000	689	708	727	746	765	784	80300	822
	00	00		00	00	00	00	00	00		00
G xij	633	652	67100	690	709	728	747	766	785	80400	823
	00	00		00	00	00	00	00	00		00
H xvij	634	653	67200	691	710	729	748	767	786	80500	824
	00	00		00	00	00	00	00	00		00
I iij	635	654	67300	692	711	730	749	768	787	80600	825
	00	00		00	00	00	00	00	00		00
K viij	636	655	67400	693	712	731	750	769	788	80700	826
	00	00		00	00	00	00	00	00		00
L xiiij	637	656	67500	694	713	732	751	770	789	80800	827
	00	00		00	00	00	00	00	00		00
M xvii	638	657	67600	695	714	733	752	771	790	80900	828

G xij	842	861	880	899	918	937	956	975	9940	1013	1032
	00	00	00	00	00	00	00	00	0	00	00
H xvij	843	862	881	900	919	938	957	976	9950	1014	1033
	00	00	00	00	00	00	00	00	0	00	00
I iij	844	863	882	901	920	939	958	977	9960	1015	1034
	00	00	00	00	00	00	00	00	0	00	00
K viij	845	864	883	902	921	940	959	978	9970	1016	1035
	00	00	00	00	00	00	00	00	0	00	00
L xiiij	846	865	884	903	922	941	960	979	9980	1017	1036
	00	00	00	00	00	00	00	00	0	00	00
M xviiij	847	866	885	904	923	942	961	980	9990	1018	1037
	00	00	00	00	00	00	00	00	0	00	00
N iiiij	848	867	886	905	924	943	962	981	1000	1019	1038
	00	00	00	00	00	00	00	00	00	00	00
O ix	849	868	887	906	925	944	963	982	1001	1020	1039
	00	00	00	00	00	00	00	00	00	00	00
P xiiiij	850	869	888	907	926	945	964	983	1002	1021	1040
	00	00	00	00	00	00	00	00	00	00	00
Q xix	851	870	889	908	927	946	965	984	1003	1022	1041
	00	00	00	00	00	00	00	00	00	00	00
R v	852	871	890	909	928	947	966	985	1004	1023	1042
	00	00	00	00	00	00	00	00	00	00	00
S x	853	872	891	910	929	948	967	986	1005	1024	1043
	00	00	00	00	00	00	00	00	00	00	00
T xv	854	873	892	911	930	949	968	987	1006	1025	1044
	00	00	00	00	00	00	00	00	00	00	00

[Lower block, p. 138 — the table concluded]

A j	1045	1064	1083	1102	1121	1140	1159	1178	119700
	00	00	00	00	00	00	00	00	
B vj	1046	1065	1084	1103	1122	1141	1160	1179	119800
	00	00	00	00	00	00	00	00	
C xj	1047	1066	1085	1104	1123	1142	1161	1180	119900

CONSTRVCTIO. The construction of this table, which can be extended without end, is perfectly easy. The centesimal years run down in order, beginning from the year 0, until nineteen cells are filled, as the table shows. Beside the year 0, which occupies the first place in the descending first column of years, and beside the centesimal years that likewise occupy the first place in the other columns, the golden number 1 is written down; from that number the rest are formed by continually adding five, always casting away 19 whenever the sum so produced is greater than 19.

VSVS. The use of the table is likewise not difficult, provided one takes note of this little table of the years collected by 19, preceded by the year 0, together with the series of all 19 golden numbers set out here.

[Small table, p. 139]

Tabella annorum per 19. collectorum. [Little table of the years collected by 19s]

0	19	38	57	76	95

Series Aureorum numerorum. [Series of the golden numbers]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

To find the golden number of any given year that is not greater than the last centesimal year of the preceding table, proceed as follows. If the year in question is itself one of the centesimals, look for it among the years of the Lord, and you will have the golden number you want immediately opposite it. If it is not a centesimal year, take from the little table of the years collected by 19 the number next smaller than the year proposed, reckoned from the centesimal year already passed, and assign it to that golden number of the adjacent series which is found written opposite the centesimal year after which the given year falls. To the next golden number of the same series assign the next year, and so on in succession, returning to the beginning of the series if need be, until you reach the year proposed. The count will end on the golden number you are looking for.

Now if the given year, taken after some centesimal, is itself found in the table of years collected by 19, then the golden number for that year is the one that answers to the centesimal year immediately preceding the given non-centesimal year.

For example: in the year 1600 the golden number is v. But in the year 1683 the golden number is xij. For if you assign to the golden number 5 — found opposite the centesimal year 1600 — the year 76 of the adjacent little table of years collected by 19, and the year 77 to the next golden number 6, and so on, the year 83 falls on the golden number 12. Again, in the year of the Lord 48 the golden number was xj. For assigning, in the adjacent series, to the golden number 1 (found opposite the centesimal year 0) the year 38 of the adjacent little table of years collected by 19 — that being the number next smaller than the given year 48 — and the year 39 to the next golden number, and so on, the year 48 ends on the golden number 11. So too in the year 1810 the golden number will be 6: for if in the adjacent series you assign to the golden number 15, written opposite the centesimal year 1800, the year 0 of the adjacent little table of years collected by 19 — that being next smaller than the given year 10 after the centesimal 1800 — and the year 1 to the next golden number 16, and so on, the year 10 ends on the golden number 6. Finally, in the year 1657 the golden number will be 5, the number that belongs to the year 1600; for the year 57 is found in the table of years collected by 19. And so with the rest.

4. We shall, however, make the use of this table far quicker in the following way. Beside the golden numbers of the table already given, write on the left the nineteen capital letters of the alphabet in order; let the same letters be repeated in the same order in this second table, and beside each of them let all nineteen golden numbers be set down, each line beginning from the golden number that exceeds by one the golden number written beside that same letter in the upper table. Finally, above these same golden numbers arrange the hundred expanded years, as you see in this table. With the golden numbers and the expanded years set down in this way, it is remarkable how quickly the golden number of any proposed year is found. For if the given year is one of the centesimals, its golden number will be found at once on its left in the upper table, as we said in the preceding use. But if the given year falls after some centesimal, its golden number will be found beneath the given expanded year, in that line of golden numbers which carries the same prefixed letter as is set before the centesimal year immediately preceding. Thus to the year 39300 in the upper table there answers the golden number 9; whereas the year 39378 agrees with the golden number 11, in this second table, under the year 78, in the line to which the letter O is attached — the letter set in the upper table opposite the centesimal year 39300.

[Table of expanded years, p. 140]

Anni expanf. [Expanded years] — vertical label in the left margin of the table

	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
4															
4	44	45	46	47	48	49	50	51	52	53	54	55	56	57	
3															
6	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
2															
8	82	83	84	85	86	87	88	89	90	91	92	93	94	95	
1															
1	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl	[bl
0	an	an	an	an	an	an	an	an	an	an	an	an	an	an	an
0	k]	k]	k]	k]	k]	k]	k]	k]	k]	k]	k]	k]	k]	k]	k]

[Table of golden numbers by index letter, p. 140]

A	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	1
									0	1	2	3	4	5	6	7	8	9
B	7	8	9	1	1	1	1	1	1	1	1	1	1	1	2	3	4	5
				0	1	2	3	4	5	6	7	8	9					6
C	1	1	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9	1
	2	3	4	5	6	7	8	9										0
D	1	1	1	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1
	7	8	9										0	1	2	3	4	5
E	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	1	2
								0	1	2	3	4	5	6	7	8	9	
F	8	9	1	1	1	1	1	1	1	1	1	1	1	2	3	4	5	6
			0	1	2	3	4	5	6	7	8	9						7
G	1	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9	1	1
	3	4	5	6	7	8	9										0	2
H	1	1	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1
	8	9										0	1	2	3	4	5	6
I	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	1	2	3
							0	1	2	3	4	5	6	7	8	9		

K	9	1	1	1	1	1	1	1	1	1	1	1	2	3	4	5	6	7	8
		0	1	2	3	4	5	6	7	8	9								
L	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9	1	1	1	1
	4	5	6	7	8	9										0	1	2	3
M	1	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1
	9										0	1	2	3	4	5	6	7	8
N	5	6	7	8	9	1	1	1	1	1	1	1	1	1	1	1	2	3	4
						0	1	2	3	4	5	6	7	8	9				
O	1	1	1	1	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9
	0	1	2	3	4	5	6	7	8	9									
P	1	1	1	1	1	1	2	3	4	5	6	7	8	9	1	1	1	1	1
	5	6	7	8	9										0	1	2	3	4
Q	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	1
										0	1	2	3	4	5	6	7	8	9
R	6	7	8	9	1	1	1	1	1	1	1	1	1	1	1	2	3	4	5
					0	1	2	3	4	5	6	7	8	9					
S	1	1	1	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9	1
	1	2	3	4	5	6	7	8	9										0
T	1	1	1	1	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1
	6	7	8	9										0	1	2	3	4	5

[Margin: *Inuentio aurei nu. ex tabellis temporariis.* — Finding the golden number from the temporary little tables]

At number 11 of this same chapter you will find a very quick method by which the golden number of any proposed year may be got out by means of certain temporary little tables. In fact the nineteen lines of golden numbers in the table just given can serve as nineteen temporary little tables. For example, the line prefixed by the letter R will give the golden number for the expanded years after the year 1600 — the centesimal year to which the same letter R answers in the preceding table of centesimal years — as far as the year 1700, provided that the expanded years written at the head of the adjacent table are used along with it. In the same way that same line of the letter R will serve for the expanded years after any centesimal year to which the same letter R answers in the preceding table of centesimal years, as far as the following centesimal. In just the same way any other line of golden numbers can serve as a temporary table for the expanded years after those centesimal years to which, in the table of centesimal years, that

letter answers which is prefixed to the line in question of the adjacent table, and it serves as far as the next following centesimal. For example, the line to which the letter G is prefixed will give the golden number in the expanded years from the year 600 to 700; and from the year 2500 to 2600; and from the year 17700 to 17800; and so with the rest.

Lastly, by means of the following table — which is like the one we set out at Canon 1 of the *Calendarium*, but much more compact, adapted to a greater number of years, and capable of being extended without end — the golden number of any year, however large, will also be found without difficulty, in this way. If the proposed year is found in this table, its golden number will be the one written beside it on the left-hand side, with 1 added, as the head of the table directs. Thus in the year 1000000000 the golden number will be xix, made up of the golden number xviii prefixed to that year, and 1.

But if the given year is not set down in this table, then one must extract from the table the golden numbers prefixed to those years that have as many ciphers (the number of ciphers is indicated by the figure placed to the right of each centesimal, so that you need not count them yourself) as there are figures following each significant figure of the proposed number. These extracted numbers are then to be multiplied by their own figures, if these are greater than 1, and from the products the cycle of 19 years is to be cast away as often as it can be. For if all these extracted golden numbers are gathered into a single sum, with a unit added besides, and all the 19s are cast away, the remainder will be the golden number of the given year.

Table of golden numbers for arbitrarily large years (the compact table announced at the end of the preceding page). The left column gives the golden number prefixed to each power-of-ten year; the right-hand figure counts the ciphers (zeros) in that year, so that they need not be counted by hand. Numerals are transcribed exactly as printed (lower-case Roman with terminal j in the left column, Arabic in the other two).

Aur. nu.	Anni Domini.			Adde 1. ad Aur. Num.	(ciphers)
j				1	0
x				10	1
v				100	2
xij				1000	3
vj				10000	4

Aur. nu.	Anni Domini. Adde 1. ad Aur. Num.	(ciphers)
iiij	100000	5
xj	1000000	6
xv	10000000	7
xvii	100000000	8
xviii	1000000000	9
ix	10000000000	10
xiiij	100000000000	11
vij	1000000000000	12
xiiij	10000000000000	13
xvj	100000000000000	14
viiij	1000000000000000	15
iiij	10000000000000000	16
ij	100000000000000000	17
j	1000000000000000000	18
x	10000000000000000000	19
v	100000000000000000000	20

Suppose the golden number of the year 4560926 is wanted. To 4000000 belongs golden number 6; for the golden number 11, which is due to the year 1000000, multiplied by 4 gives 44, and casting away 19 leaves 6. To 500000 belongs golden number 15, since to 100000 belongs 3, which multiplied by 5 makes 15. To 60000 belongs golden number 17. To 900, golden number 7. To 20, golden number 1. Finally to 6, golden number 6. The sum of all is 52; and casting away 19 there remain 14, to which 1 is added, making golden number 15 — the number that fits the proposed year.

[Side reckoning printed in the right margin of this paragraph:]

6
15
17
7
1

All the 19s will be cast away if all the 20s are thrown out and as many units are added to the remainder as the number of times 20 was cast away. Thus, when all the 19s have been cast out of 87, 11 are left over; for if 4 (since 20 is contained four times in 87) is added to 7, the result is 11.

Whenever, too, some golden number of the table greater than 10 has to be multiplied by a significant figure, it will be done very conveniently if 10 is first multiplied by that figure, and then the remaining units, always casting away 19 whenever it can be cast away. Thus if 18 is to be multiplied by 7, we shall multiply 10 by 7, and from the product 70 cast away 19 so that 13 remains. Then we shall multiply 8 by 7, and from the product 56 throw out 19 so that 18 remains; added to 13 this makes 31, and casting away 19 leaves 12.

We shall perhaps manage the same thing more easily even without multiplying the extracted golden numbers by the significant figures — in this way. Set the extracted numbers down in order, writing each of them as many times as there are units in the significant figure that answers to it. Then join the first number in order to the second, and this aggregate to the next, and so on; taking care, however, that as soon as you have made up 19 or more, you throw out 19. Thus in the same example the extracted numbers will stand like this:

11.11.11.11.3.3.3.3.6.6.6.6.5.5.5 5.5.5.5.5.10. 10. 6. So then, 11 and 11 make 22, and casting away 19 leaves 3; these with the following 11 make 14; and these with the 11 that follows make 25, and casting away 19 leaves 6; these gathered in order with 3.3.3.3.3 make 21, and casting away 19 leaves 2; these with 6.6.6 in order make 20, and casting away 19 leaves 1; this with the following 6.6.6 makes 19, which is to be cast away. Next 5.5.5.5 make 20, and casting away 19 leaves 1; this with the following 5.5.5.5 yields 21, and casting away 19 leaves 2; these with 5.10.10 make 27, and casting away 19 leaves 8; these with 6 come to 14, and with 1 added at last the golden number 15 results, as before. Still, the earlier procedure is quicker whenever the multiplication by the significant figure can easily be done in the head.

The construction of the table is easy as well. The years advance from unity by a tenfold ratio, but the golden numbers by halving — with 19 added, however, to an odd golden number, so that it can be halved. Thus, adding 19 to 1 gives 20, and the half yields the next golden number x. The half of the number 10 gives the

following golden number v, and so on. Let this be enough about finding the golden number. In the *Computus Ecclesiasticus*, which I shall write out at the end of this book, you will find besides a rule by which you can work out the golden number of any year, however large, in your head and with no trouble at all.

[Margin: Use of the expanded table and of the equation of the epacts in finding the epact of any year. — By which table the epact is found more correctly after the year 8200.]

5. The finding of the epact for any year depends on the use of the expanded table and of its equation, described in the preceding chapter; and it runs as follows. Look up the proposed year in the table of equation, if it is one of the centesimal years; or, if it is not one of the centesimals, take the centesimal year next below the proposed year, or else the year 1582 if the given year falls after the correction and before the year 1600. (After the year 8200, however, the epact will be found more correctly from the table of equation which I shall set up below at the end of Num. 10, whose use is in fact the same as that of the preceding table of equation.) Note carefully the letter prefixed to that centesimal year. For the line of epacts which

has that same letter prefixed to it in the expanded table is the one to be used — not only for the proposed year, but for all the other years as well from that centesimal up to the next centesimal year that has a different letter attached. And the epact which stands in that line under the golden number of the year in question at the head of the table is the one to be assigned to the proposed year. For that epact will mark, in the *Calendarium*, all the new moons of that year according to the usage of the Church; and its use will begin in January — although in centesimal years that are not bissextile, provided the Moon needs no equation, the new moons in the first two months of the year are put back by one day, as found by the new epact. No absurdity arises from this in the Paschal new moons, and that postponement occurs only in the first two months of that one centesimal year.

[Margin: [?]*libet anni Epacta in Ianuario incipit.* — "The epact of any year begins in January." (The first word runs off the edge of the printed margin; probably *cuius-*.)]

Therefore, to find the epact of any year, one must first find the golden number of that year, and the line of epacts in the expanded table which serves that century. I shall set out some examples reaching to more distant centuries — but I do this only for practice, since I well know that the prescribed equation diverges from

astronomical calculation over such great stretches of centuries, as I shall say below.

For example. Given the year 1593, one must take in the table of equation the year 1582, which is the one next below it in the table, together with the capital letter D. Then, in the expanded table, the line of epacts to be taken will be the one prefixed by that same capital D. For this line will be in use from the year 1582 — after the correction, that is — up to the year 1700 exclusive, which already has a different letter prefixed to it. And since in the year 1593 the golden number is 17, to which in the assumed line of epacts of the capital letter D there answers the epact xxvij, that epact will be the one employed in that very year 1593, and the new moons will fall in that year on the days against which the epact xxvij is set in the *Calendarium*.

Again, for the year 1916 one must take in the table of equation the year 1900 together with the capital letter B; and in the expanded table one must take the line of epacts that has that same letter B prefixed. For this will be in use from the year 1900 up to the year 2200 exclusive, before which another letter is set. And since the golden number of the year 1916 is 17, to which in the accepted line of epacts of the capital letter B there answers the epact 25 — marked in a different character from the others — that epact will indicate the new moons of the whole of that year in the *Calendarium*.

Again, let the year 114519 be given. To the year 114500, which is the centesimal next below the proposed year, the minuscule letter f is prefixed in the table of equation. In the expanded table, therefore, the line of epacts of that same minuscule f is to be taken. For this will be in use from the year 114500 up to the year 114700 exclusive. And since the golden number of the year 114519 is 7, to which in the said line of epacts there answers the epact j, the epact j will show the new moons of that year in the *Calendarium*.

Lastly (to offer an example from before the correction of the year as well), if the year 415 is proposed, one must take in the table of equation the year 320, which is next below it, together with the capital letter P; and in the expanded table the topmost line of epacts, to which that same capital P is assigned. For this was the line to be used at that time. Since, then, in the year 415 the golden number was 17, to which in that line of epacts there answers the epact iiij, all the new moons of that year fell on the days against which the epact iiij is written. And the same reasoning holds in the rest.

[Margin: Construction of the perpetual cycle of the epacts.]

6. But in place of the expanded table we shall be able to use the following perpetual cycle of the epacts. Although I set it out in the *Calendarium Gregorianum Perpetuum*, I judge that it should nevertheless be repeated here, so as to extend its use to more years. Its construction is this. Set down in order all 30 epacts, beginning from *, that is xxx, and advancing by continual addition of 11 — always throwing out 30, however, when the sum comes to more than 30. Then place above these epacts the letters that are assigned to those epacts in the expanded table under golden number 3, as you see here. The epact xxv.25 is doubled under the capital letter F, and is marked with different characters.

CYCLVS EPACTARVM PERPETVVS. [Perpetual cycle of the epacts]

P	l	C	c	p	F		f	f	M	i
*	xj	xxij	iiij	xiiiij	xxv. 25.		vj	xvij	xviiij	ix

A	a	m	D	d	q	G	g	t	N	
xx	j	xij	xxiiij	iiiij	xv	xxvj	vij	xviiij	xxix	

k	B	b	n	E	e	r	H	h	u	
x	xxj	ij	xiiij	xxiiiij	v	xvj	xxvij	viiij	xix	

MALVIMVS — We have preferred, in this little table, to write the index letters of the expanded table above those epacts which in the expanded table are placed under golden number 3 next to the same epacts, rather than above those which answer to the same letters at golden number j (though this could have been done). Our reason was that it should be more easily understood that this little table is excerpted from the expanded table, and that the one should differ as little as possible from the other; but above all, that these same letters should be used in the *Martyrologium* for announcing the age of the Moon, at the times when the epacts written beneath them are in use, as was said above in cap. 11 not far from the beginning. No other reason for this construction is to be looked for.

[Margin: Finding the epact for any year from the perpetual cycle of the epacts.]

To this little table of the perpetual cycle of the epacts there answers the table of equation of the expanded table given above, and also the more correct one which we shall set out below at Num. 10; and its use in searching out the epact of any year is as follows.

Look up the proposed year in the table of equation — or, if it is not found in the table, the year next below it — and note the letter of the alphabet, whether capital or small, placed to its left; and work out the golden number belonging to the proposed year. Then in the perpetual cycle of the epacts look for the matching letter, and assign golden number 1 to the cell which, counting inclusively, is the third to the left from that letter; assign the next golden number, 2, to the following cell on the right, and so on, until you reach the golden number of the proposed year — returning to the beginning of the cycle if you have run through it to the end before reaching the golden number of the proposed year, and counting the capital letter F, under which the doubled epact xxv.25 is placed in two different characters, as a single cell. When this has been duly carried out, the epact of that year will be found at once in the cell into which the golden number of the proposed year falls. Note carefully, however, that when the golden number of the proposed year is greater than 11 — as are the last eight golden numbers 12.13.14.15.16.17.18.19 — and it falls into the cell of the capital letter F, where there are the two epacts xxv. 25, then the epact 25 marked with the different character is to be taken; but the other epact xxv if the golden number of the proposed year that falls into that same cell is less than 12, such as are the first eleven golden numbers 1.2.3.4.5.6.7.8.9.10.11.

We shall make this plain by examples. To the year 1582, after the correction — that is, after the subtraction of the 10 days — there answers in the table of equation the capital letter D, and in that year the golden number was 6. If, then, in the perpetual cycle of the epacts you assign golden number 1 to the cell of the small letter a, which is the third to the left from the cell of the capital letter D, and golden number 2 to the next cell on the right, and so on, the golden number 6 of the proposed year 1582 will fall into the cell of the epact xxvj — which in the *Calendarium* marked the new moons from the Ides of October of that year, that is, after the removal of the 10 days.

Again, suppose the epact is to be investigated for the same year 1582 before the correction, namely from January up to October. Since in the table of equation the year before the correction next below is 1400, to which the small letter c is prefixed, the matching small letter c must be taken in the perpetual cycle of the epacts. If, then, you assign golden number 1 to the cell of the small letter l, which

is the third to the left from the cell of the small letter c, and golden number 2 to the next cell on the right, and so on, the golden number 6 of the same year will fall into the cell of the epact vj — which is what is due to the year 1582 before the removal of the 10 days.

Again, in the year 1599 the golden number is 4, and to it there answers in the table of equation the capital letter D. For since this year is not found in the table, the next lower one, 1582, must be taken, to which the capital letter D is assigned. Assigning, then, in the table of epacts, golden number 1 to the cell of the small letter a, which is the third towards the left from the cell of the capital letter D, and golden number 2 to the next cell on the right, and so on, the golden number 4 of the proposed year will fall into the cell of the epact iiij, which will show the new moons of that year in the *Calendarium*.

Furthermore, to the year 4218 there answers in the table of equation the small letter l, and the golden number is 1. So if in the cycle of the epacts you assign golden number 1 of that year to the cell of the letter u, which is the third to the left from the cell of the letter l, you will find that the epact xix belongs to the year 4218.

Further still, to the year 1710 there answers the capital letter C in the table of equation, and again the golden number is 1. So if you assign golden number 1 of that year to the first cell, that of the capital letter P in the cycle of the epacts, which is the third from the capital letter C, you will find * for the epact of that year.

To the year 1912, likewise, there answers in the table of equation the capital letter B, and the golden number is 13. Accordingly, if in the cycle of the epacts golden number 1 is assigned to the cell of the capital letter N, which is the third from the capital letter B, and golden number 2 to the next cell on the right, and so on, returning to the beginning of the cycle, the golden number 13 of the proposed year will fall into the second cell. The epact will therefore be xj at that time.

Yet again, to the year 1715 there answers in the table of equation the capital letter C, and the golden number is 6. Assigning, then, golden number 1 to the first cell in the cycle, where the capital letter P stands, which is the third from the cell of the capital letter C, and golden number 2 to the next cell on the right, and so on, the golden number 6 of the proposed year will fall into the cell of the letter F, under which is placed the doubled epact xxv.25. But since the golden number 6 is not greater than 11, the epact xxv is to be taken for the year 1715, and not the 25 of the different colour.

Lastly, to the year 1916 there answers in the table of equation the capital letter B, and the golden number is 17. Therefore, if in the perpetual cycle of the epacts golden number 1 is given to the cell of the capital letter N, which is the third from the cell of the capital letter B, and golden number 2 to the next cell on the right, and so on, returning to the beginning of the cycle, the golden number 17 of the proposed year will come out at that same cell F, under which the doubled epact xxv.25 is found. And since the golden number 17 is greater than 11, the epact 25 of the different colour or character is to be taken for the year 1916. In this way you will find the epact of any year whatever, for ever.

7. By this method, then, the expanded table of the epacts is reduced to a compendium by means of the perpetual cycle of the epacts, as has just been explained. But we shall reduce the table of equation given above — which is extremely long — to a small size no less conveniently, in this way. Write down the left-hand side of the table, in order, the thirty letters of the expanded table, beginning from the capital C, which is prefixed to the year 1700 (the point at which we said, in cap. 11, Num. 10, that the order of the cycle of 300000 years begins), and running backwards through B, A, u, and so on, as far as D. Then beside each letter write the places, or seats, of those centesimal years within the first span of 10000 years (taking the start from the year 1700 up to the year 11600 inclusive) to which that letter is prefixed in the table of equation. For example: because the capital letter C is prefixed in the table of equation to the first and second centesimals (that is, to the years 1700, 1800) and to the seventy-first, seventy-second and seventy-third centesimals from the year 1700 inclusive (that is, to the years 8700, 8800, 8900), we have accordingly written beside the capital letter C the seats 1.2.71.72.73. On the same principle we have put beside the small letter u the seats 7. 9. 78. 80, which are the places occupied, within the first span of 10000 years from the year 1700 up to the year 11600 inclusive, by the years 2300, 2500, 9400, 9600 — the years to which the small letter u is prefixed in the table of equation. And so on for the rest.

The compendium of the table of equation

The compendium is printed as three side-by-side blocks of ten rows each, thirty index letters in all, running from the capital C backwards to the capital D. In each row the index letter stands first, followed by the seats (the ordinal positions of the centesimal years) it governs within the first span of 10000 years, counted from 1700 inclusive.

Left block

Letter					
C	1	2	71	72	73
B	3	4	5	74	
A	6	8	75	76	77
u	7	9	78	80	
t	10	11	12	79	81
f	13	14	82	83	84
r	15	16	17	85	86
q	18	20	87	88	89
p	19	21	90	92	
n	22	23	24	91	93

Middle block

Letter					
m	25		94	95	96
l	26		27	28	97 98
k	19 [?] [recte: 29]		30	99	100
i	31		32	33	
h	34		36		
g	35		37		
f	38		39	40	
e	41		42		
d	43		44	45	
c	46		48		

Right block

Letter					
b		47	49		
a		50	52		
P		51	53		
N		54	55	56	
M		57	58		
H		59	60	61	

Letter

G	62	64	
F	63	65	
E	66	67	68
D	69	70	

[Margin: The use of the compendium of the table of equation in finding the epact of any given year.]

8. So this is that immense table of the equation of the epacts, reduced — as you see — to so remarkable a compendium. By it we shall find, with the greatest ease, which letter of the expanded table of the preceding chapter, or of the perpetual cycle of the epacts, is to be used in looking up the epact for any proposed year, however large — even though the epact found from that table after the year 8200 does not correspond exactly to the celestial new moons, as we shall explain in Num. 10 of this chapter. Take any proposed centesimal year not greater than 301600 (if it is greater, discard the 300000 years of the whole cycle) and subtract 1600 from it. Then look up, in the table just given, the number expressed by the thousands and hundreds — this number indicates the seat of the proposed centesimal year, counted from 1700, within the first cycle of 10000 years. The letter prefixed to that number is the one to be taken up in the expanded table, or in the perpetual cycle of the epacts, at the centesimal year that occupies that seat in the first cycle of 10000 years; and that same letter will serve for the proposed centesimal year, provided that after subtracting 1600 the remaining number has not turned out greater than 10000. But if the remainder is greater than 10000, then, starting from the letter found in the table just given, you must count off 13 letters against the series of the letters, as many times over as there are units in the number of ten-thousands. Counting in this way you will end on the letter that is to be taken for the proposed centesimal year. And if the ten-thousands are more than 2, they must be multiplied by 13 and the product divided by 30; the remainder then gives the number of letters to be counted after the one found. Likewise, whenever the number expressed by the thousands and hundreds is 00, a unit must be borrowed from the ten-thousands so as to obtain seat 100 — that is, the last year of the cycle of 10000 years.

Let us illustrate the matter by examples. Take the year 10000. Subtract 1600 and 8400 remain. In the table above, then, the letter to be taken is the small f, beside seat 84. And since there is no ten-thousand present — the number left, 8400, not being greater than 10000 — the proposed year 10000 falls within the first cycle of 10000 years, and so that very same letter f is to be used. Since the golden number is then 7, the epact will be j, which answers to golden number 7 in the line of the small letter f in the expanded table, and so on.

Again, let the year be 11600. Subtract 1600 and 10000 remain. Seat 100 therefore gives the small letter k. And since nothing remains in the ten-thousands, nothing is to be counted after the letter k; k itself is to be taken. In the line of the letter k, golden number 11 shows epact viii for the proposed year, whose golden number is 11.

Further, let the year given be 34700. Subtracting 1600, 33100 remain. So seat 31, which the number expressed by the thousands and hundreds yields, offers the small letter i; and if from it you count 13 letters three times over (there being 3 in the ten-thousands) — that is, 39, or (casting out 30) 9 — you will fall on the capital P, which is owed to the given centesimal year. The golden number 7 of that same year will then show, in the line of the capital P in the expanded table or in the perpetual cycle of the epacts, the epact xiiij.

Likewise, let the year 41600 be offered. Taking away 1600, 40000 are left. Since the number expressed by the thousands and hundreds is 00, we shall borrow 1 from the ten-thousands so as to have seat 100, to which the small letter k is prefixed in the table above. Counting from it 13 letters three times, that is 39, or (casting out 30) 9 — because 3 remain in the ten-thousands — you will fall on the small letter a, which is due to the centesimal year offered. The golden number 10 of that same year will then give the epact xviiij.

Take next the year 301600. Subtracting 1600, 300000 remain. And since in the place of the thousands and hundreds the number 00 is found, we shall borrow 1 from the 30 ten-thousands so as to have seat 100, with the small letter k in the table above. Then, if we count off 13 letters as many times as there are units in the remaining number 29 of ten-thousands — that is (casting out all the 30s, which is done by multiplying 29 by 13, and dividing the resulting product 377 by 30, for the remainder will be 17) — 17, we shall fall on the capital D of the table above, which will be in use in the year 301600, namely in the 300000th year from 1700 inclusive, that is, at the end of the whole cycle of 300000 years, and so on.

Further still, let the year given be 590600. Subtracting 300000, 290600 remain; and taking 1600 from these, 289000 are left. So in the table above we shall take seat 90, with the small letter p. Next we shall multiply the 28 ten-thousands by 13 and divide the product 304 [?] by 30. For if we count the remaining number 4 after the small letter p, the fourth unit will fall on the small letter k, which is to be used for the year 590600, and so on.

Finally, let the year 671600 be offered. Casting out 300000 twice, 71600 are left; and taking 1600 from these, 70000 remain. So, borrowing a unit from the ten-thousands, we shall have seat 100 with the small letter k in the table above; and if 13 is counted off from it six times — as many times, that is, as there are units in the 6 ten-thousands — the counting will end at the capital C, since 13 multiplied by 6 makes 78, and dividing this by 30 leaves 18; and 18 letters counted after k yield the capital C. And so for the rest.

But if you prefer to count the letters after the one found in the table above in the natural series of the alphabet, you must take, after the division by 30, the complement of the remainder up to 30 — provided that, if you wish to count from

memory, you remember that among the small letters the letter o is to be omitted and that they do not run past u, while among the capitals the letters I, K, L, O are to be left out and one must not go beyond P: after the capital P one returns to the small a, and after the small u one passes over to the capital A, as was said above in cap. 11, Num. 2. Or else the number of ten-thousands must be multiplied not by 13 but by 17, and the resulting number divided by 30. The remainder of the division will then show how many letters are to be counted in the natural series after the letter found in the table above.

For example: in the year 34700 we found a moment ago that 9 letters were to be counted after the small letter i in retrograde order, thus: h, g, f, e, d, c, b, a, P — so that the capital P is the one to be used for that centesimal year. But since the complement of 9 up to 30 is 21, if after that same small letter i you count 21 letters in the natural order you will meet the same capital P, as you see here: k, l, m, n, p, q, r, f, t, u, A, B, C, D, E, F, G, H, M, N, P. You will also obtain this number 21 if you multiply the ten-thousands of the given centesimal year — that is, the number 3 — by 17, and divide the product 51 by 30; for the remainder will be 21.

Again, in the year 590600 we found that 4 letters had to be counted after the small letter p thus: n, m, l, k, so that the small letter k is the one to be used for that centesimal year. If after that same small letter p we count 26 in the forward order — 26 being the complement of the number 4 up to 30 — we shall find the same

small letter k, as you see here: q, r, f, t, u, A, B, C, D, E, F, G, H, M, N, P, a, b, c, d, e, f, g, h, i, k. That number 26 will also be had if (after casting 300000 out of that centesimal year, and taking 1600 from the remaining number 290600, so that the remainder becomes 289000) the ten-thousands, namely 28, are multiplied by 17 and the number so produced, 476, is divided by 30: for the remainder of the division will be 26.

The reason why, after the letter found, 13 letters are to be counted in retrograde order (or 17 in the forward order) as many times as there are units in the ten-thousands — first casting out the 30s from the product made by the ten-thousands into 13 or 17 — is this: the ten-thousands show how many cycles of 10000 years have run out from the year 1700 inclusive up to the proposed centesimal year. Since, then, in every cycle of 10000 years the same varieties of letters return, as we said in cap. 11, Num. 10; and since in any such cycle of 10000 years, from the letter prefixed to any centesimal year up to and including the letter prefixed to that centesimal year of the following cycle of 10000 years which occupies the same seat in its own cycle as the earlier centesimal did in its own, 13 letters are counted in retrograde order, or 17 in the direct order, as they are set down in the expanded table — from all this it is perfectly clear why we prescribe counting 13 in retrograde order as many times as there are units in the ten-thousands, and accordingly counting after the letter found as many letters in the forward order as are contained in the complement of that former number up to 30. That complement is in fact produced if the ten-thousands [printed *duæ millenarum* [?]] — apparently for *denæ millenarum*] are multiplied by 17 and the resulting number divided by 30; for the remainder of the division will give that complement.

Thus you see that after the capital C prefixed to the year 1700 — the first year of the first cycle of 10000 years — up to the small letter i prefixed to the year 11700, which is the first of the second cycle of 10000 years, 13 letters are counted in retrograde order, namely B, A, u, t, f, r, q, p, n, m, l, k, i; or in the direct order these seventeen: D, E, F, G, H, M, N, P, a, b, c, d, e, f, g, h, i. And you see the same thing happen after the capital A set beside the year 2400, which is the eighth in the first cycle of 10000 years, up to the small letter g affixed to the year 12400, which is likewise the eighth in the second cycle of 10000 years, as you observe here: u, t, f, r, q, p, n, m, l, k, i, h, g; and here: B, C, D, E, F, G, H, M, N, P, a, b, c, d, e, f, g. And so on in succession.

So that those five letters — the small o and the capitals I, K, L, O — which are to be left out of the alphabet, as we said, may also be kept in memory, and so that

the letters may be counted from memory, without any table, whether in the forward or in the retrograde order, after the letter found in the table above, this little verse of five words beginning with the letters in question is to be learned by heart:

ornabit Iuftos Kú[?] Laudabilis Omnes.

[Margin: Finding the letter of the expanded table or of the perpetual cycle of the epacts for investigating the epact in any given year, by the rules of arithmetic.]

9 We shall find that same letter of the expanded table, or of the perpetual cycle of the epacts, which serves to investigate the epact for any proposed centesimal year, without the table above, by the rules of arithmetic, in this way. Take any proposed centesimal year not greater than 301800 (for when it is greater, the whole cycle of 300000 years is to be cast out) and subtract 1600 from it. Divide the remainder by 400 and multiply by 3. If to the product you add as many units as there are hundreds left over in the division (if any remain), you will have the number of days omitted from the year 1700 inclusive up to the given centesimal year inclusive — a number of days that is in fact more easily found in the table of equation above, alongside the centesimal years. Now let this number of omitted days be kept, after first taking 2 from it. For since, on account of the lunar equation, we must begin this method of finding the epact from the year 1900, at which the uniform order of the lunar equation begins, no account is to be taken of the two days that are omitted in the years 1700 and 1800.

Next, from the same centesimal year offered (having first cast out 300000, if it is greater than 301800) take away 1800; or — what comes to the same thing — subtract 200 from that earlier residue which was divided by 400. Divide the remainder by 2500 and multiply the quotient by 8. (For in 2500 years the new moons anticipate their places in the calendar by eight days, these years beginning from 1900, as is clear from the table of equation.) To the number so produced add as many units as there are 300s to be found in the remainder of the division — provided that eight are never added, even if 2400 are left over, in which 300 is contained eight times, since it is 2500 years, not 2400, that call for eight days. Subtract this sum from the number of omitted days kept above; the remaining number (provided that all the 30s are first thrown out of it, which is done by dividing by 30) will give the letter to be taken in the expanded table, counting downwards in retrograde order from the letter B inclusive (the letter prefixed to the year 1900 in the table of equation) as far as that remaining number inclusive. If nothing is left over after the last division by 30, the letter to be taken will be the

30th from B inclusive in retrograde order — that is, the capital C, which stands immediately above the letter B. But if 1 is left over, the letter B itself is to be used.

The matter will become clearer by adding examples. Let the year given be 2000. Subtracting 1600, 400 remain, which divided by 400 make the quotient 1, with nothing left over. The quotient 1 multiplied by 3 yields 3 days omitted from 1700 inclusive up to the year 2000 inclusive. Taking away 2, there is left 1, which is to be kept. Next, from the same year 2000 subtract 1800, or 200 from the earlier residue 400. The remaining number, 200,

is to be divided by 2500, and the quotient 0 multiplied by 8. To the product 0 add 0, since in the remainder of the division, 200, there is no 300; the number is 0, which subtracted from the 1 kept above leaves 1. The first letter, therefore, from the capital B prefixed to the year 1900 inclusive — that is, the capital B itself — will serve for the given year 2000.

Let the year 29600 be offered next. Taking away 1600, 28000 remain, which divided by 400 make 70, with nothing left over. So 70 multiplied by 3 gives 210 days omitted from 1700 inclusive up to the year 29600 inclusive. Taking away 2, the remaining number 208 is to be kept. Next, from the same given year 29600 subtract 1800, or 200 from the earlier residue 28000. The remaining number 27800 is then divided by 2500, giving a quotient of 11 with a remainder of 300. The quotient multiplied by 8 makes 88, and adding 1 on account of the 300 left in the division, the sum is 89. Subtracted from the number 208 kept above, this leaves 119; and dividing these by 30, 29 are left over. The 29th letter, therefore, from the capital B inclusive — namely the capital D — will serve for the proposed year 29600.

Let the year given likewise be 6700. Taking away 1600, 5100 remain, which divided by 400 give a quotient of 12 with 300 left over. The quotient 12 multiplied by 3 makes 36, and adding 3 on account of the 300 left over in the division, we get 39 as the number of days omitted from 1700 inclusive up to the year 6700 inclusive. Taking away 2, then, the remaining number 37 is to be kept. Next, from the same year 6700 take 1800, or 200 from the earlier residue 5100, and divide the remainder 4900 by 2500. The quotient 1 is multiplied by 8, and to the product 8 add 7, because 2400 were left over in dividing 4900 by 2500 (for although 300 is contained eight times in 2400, only 7 are to be added, as has been said); so the number becomes 15. Subtracted from the number 37 kept above, this leaves 22. The 22nd letter, therefore, from the capital B inclusive in retrograde order — namely the capital P — will fit the proposed year 6700.

Let the year 301800 be proposed as well. From it the 300000 years are not to be cast out, since it is not greater than 301800. Subtracting 1600, 300200 remain, which divided by 400 give a quotient of 750 with 200 left over. The quotient 750 multiplied by 3, and 2 added to the product 2250 on account of the 200 left in the division, yields 2252 as the number of days omitted from the year 1700 inclusive up to the year 301800 inclusive. Taking away 2, then, the remaining number 2250 is to be kept. From the same proposed year 301800 subtract 1800, or 200 from the earlier residue 300200. The remainder 300000 is divided by 2500, giving a quotient of 120 with no remainder at all. This quotient multiplied by 8 makes 960, which taken from the number 2250 kept above leaves 1290. Finally, dividing these by 30, nothing is left over. So the 30th letter from the capital B inclusive, in retrograde order — namely the capital C — will be in use for the proposed year 301800.

Further, let the year given be 176500. Taking away 1600, 174900 remain, which divided by 400 give a quotient of 437 with a remainder of 100. The quotient 437 multiplied by 3, with 1 added to the product on account of the 100 left in the division, brings out 1312 as the number of omitted days. Taking away 2, then, the remaining number 1310 is to be kept. From the same year 176500 subtract 1800, or 200 from the earlier residue 174900. Dividing the remainder 174700 by 2500 gives a quotient of 69 with 2200 left over. The quotient 69 multiplied by 8, and 7 added to the number 552 so produced (because 300 is contained seven times in that remainder 2200), makes the sum 559. Taking this from the number 1310 kept above, 751 are left; and dividing these by 30, 1 is left over. So the first letter from the capital B inclusive — that is, the very letter B — is to be assigned to the proposed year 176500.

Lastly, let the year 671600 be offered. Casting out 300000 twice, and taking 1600 from the remaining number 71600, 70000 remain, which divided by 400 give a quotient of 175 and leave nothing. 175 multiplied by 3 makes 525 days omitted. Taking away 2, then, the remaining number 523 is to be kept. After this, from the same remaining number 71600 take 1800, or 200 from the earlier residue 70000. Dividing the remainder 69800 by 2500 gives a quotient of 27 with 2300 left over. The quotient 27 multiplied by 8, and 7 added to the product 216 (because 300 is contained seven times in 2300), makes 223. Finally, taking these from the number 523 kept above, 300 are left; and dividing these by 30, nothing is left over. So the 30th letter from B inclusive — that is, the capital C — is to be used for the year 671600. And so for the rest.

But if anyone prefers to count from memory upwards from the capital B in the natural series of the letters, through C, D, and so on, rather than downwards through A, u, t, and so on, he must take the complement of the remainder found up to 30 and add 2 to it; for the number so made up will fall on the letter sought. For example: in the year 29600 we found that 29 letters were to be counted from the letter B in retrograde order; the complement of these up to 30 is 1, and adding 2 makes 3. The third letter from the capital B — namely D, as appears here: B, C, D — is then the one to be taken. Again, for the year 6700 we said that 22 letters were to be counted from B inclusive downwards. And since the complement of the number 22 up to 30 is 8, adding 2 makes 10; the tenth letter from B — that is, the capital P, as is clear here: B, C, D, E, F, G, H, M, N, P — is then the one to be used. Likewise, for the year 761600 [recte: 671600] it was said that 30 letters had to be counted from B inclusive. Since, then, the complement of the number 30 up to 30 is 0, and adding 2 gives 2; or else, since the complement of the residue 0 (for when we divided 300 by 30 above the remainder was 0) up to 30 is 30, and adding 2 makes 32, and casting out 30 leaves 2 — the letter to be taken is then the second from B inclusive, namely C, as appears here: B, C. Finally, for the year 2000 we showed that one letter was to be counted from B inclusive. And since the complement of 1 up to 30 is 29, and adding 2 makes 31, and taking away 30 leaves 1, the letter to be taken is again the first from B inclusive — that is, the capital B itself.

We shall reach the same result even if the 300000 are not thrown out of the proposed year when they can be thrown out. Take again the year of the last example, 671600. Subtracting 1600, 670000 remain; and dividing these by 400 the quotient is 1675, with nothing left over. Multiplying this by 3 produces 5025 as the number of days taken away. Taking away 2, the remainder 5023 is to be kept. Again, subtracting 1800 from the same year 671600, 669800 remain; and dividing these by 25 [?] the quotient is 267, with 2300 left over. Multiplying 267 by 8 begets 2136, and adding 7 (because 300 is contained seven times in the remainder 2300) the number becomes 2143. Taking this from the number 5023 kept above, 2880 are left; and dividing these by 30, nothing is left over. So the 30th letter from B inclusive in retrograde order — that is, the capital C — is to be taken for the year 671600, as before. Or else, to the complement of the remainder

of the remainder, 0 — that is, add 2 to 30 to make 32; and, throwing out 30, count the remaining 2 in the natural order from B inclusive, and you will again fall on the same letter C, the capital.

BUT to spare ourselves the labour of always hunting out, by divisions and multiplications, the number which (after throwing out 30 as often as this can be done) has to be counted from B inclusive in retrograde order, so as to find the letter of the expanded table to be used for the proposed year — as we taught at the beginning of this Num. 9 — we shall set out here a thoroughly convenient table, in which the said number owed to each centesimal year is entered as far as the year 28400. We shall then add a further table of years collected by 10000, 100000, and 1000000, from which the same number can be extracted for any centesimal year whatever, even one greater than 28400. Now the numbers assigned to the centesimal years indicate the days of the *postposition* of the Moon [dies postpositionis Lunæ] — that is, by how many days later the new moons generally fall in the Calendar. For that number is what remains when the days of the Moon's anticipation are subtracted from the days taken out, by which the Moon would be thrust downward, were it not that she herself climbs upward by eight days in every span of 2500 years, and by one day in every 300 years.

SEQVITVR TABVLA PRIORPostpositionum Lunæ.

THERE FOLLOWS THE FORMER TABLE of the Postpositions of the Moon.

TABVLA PRIOR.

THE FORMER TABLE.

Column headers, repeated over each of the seven paired columns: *Anni per 100. collecti.* — "Years collected by 100"; *postpositio Lu.* (in the last two pairs, *postpositio. Lu.*) — "postposition of the Moon."

Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.	Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.	Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.	Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.	Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.	Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.	Ann i per 100. coll ecti.	Ann pof t- pof itio Lu.
170 0	0	570 0	17	970 0	34	137 00	51	177 00	68	217 00	86	257 00	10 3
180 0	0	580 0	17	970 0	35	138 00	52	178 00	69	218 00	86	258 00	10 3
190 0	1	590 0	18	970 0	35	139 00	52	179 00	70	219 00	87	259 00	10 4

Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.
200 0	1	600 0	18	100 00	35	140 00	52	180 00	69	220 00	87	260 00	10 4
210 0	1	610 0	18	101 00	36	141 00	53	181 00	70	221 00	87	261 00	10 4
220 0	2	620 0	19	102 00	36	142 00	54	182 00	71	222 00	88	262 00	10 5
230 0	3	630 0	20	103 00	37	143 00	54	183 00	71	223 00	89	263 00	10 6
240 0	2	640 0	19	104 00	37	144 00	54	184 00	71	224 00	88	264 00	10 5
250 0	3	650 0	20	105 00	37	145 00	55	185 00	72	225 00	89	265 00	10 6
260 0	4	660 0	21	106 00	38	146 00	55	186 00	72	226 00	90	266 00	10 7
270 0	4	670 0	22	107 00	39	147 00	56	187 00	73	227 00	90	267 00	10 8
280 0	4	680 0	21	108 00	38	148 00	56	188 00	73	228 00	90	268 00	10 7
290 0	5	690 0	22	109 00	39	149 00	56	189 00	73	229 00	91	269 00	10 8
300 0	5	700 0	23	110 00	40	150 00	57	190 00	74	230 00	91	270 00	10 9
310 0	6	710 0	23	111 00	40	151 00	58	191 00	75	231 00	92	271 00	10 9
320 0	6	720 0	23	112 00	40	152 00	57	192 00	75	232 00	92	272 00	10 9
330 0	6	730 0	24	113 00	41	153 00	58	193 00	75	233 00	92	273 00	11 0
340 0	7	740 0	24	114 00	41	154 00	59	194 00	76	234 00	93	274 00	11 0

Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.
350 0	8	750 0	25	115 00	42	155 00	59	195 00	77	235 00	94	275 00	11 1
360 0	7	760 0	25	116 00	42	156 00	59	196 00	76	236 00	93	276 00	11 1
370 0	8	770 0	25	117 00	43	157 00	60	197 00	77	237 00	94	277 00	11 1
380 0	9	780 0	26	118 00	43	158 00	60	198 00	78	238 00	95	278 00	11 2
390 0	9	790 0	27	119 00	44	159 00	61	199 00	78	239 00	95	279 00	11 3
400 0	9	800 0	26	120 00	44	160 00	61	200 00	78	240 00	95	280 00	11 2
410 0	10	810 0	27	121 00	44	161 00	61	201 00	79	241 00	96	281 00	11 3
420 0	11	820 0	28	122 00	45	162 00	62	202 00	79	242 00	97	282 00	11 4
430 0	11	830 0	28	123 00	46	163 00	63	203 00	80	243 00	97	283 00	11 4
440 0	11	840 0	28	124 00	45	164 00	62	204 00	80	244 00	97	284 00	11 4
450 0	12	850 0	29	125 00	46	165 00	63	205 00	80	245 00	98		
460 0	12	860 0	29	126 00	47	166 00	64	206 00	81	246 00	98		
470 0	13	870 0	30	127 00	47	167 00	65	207 00	82	247 00	99		
480 0	13	880 0	30	128 00	47	168 00	64	208 00	81	248 00	99		
490 0	13	890 0	30	129 00	48	169 00	65	209 00	82	249 00	99		

Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.	Ann i per 100. coll ecti.	pof t- pof itio Lu.
500 0	14	900 0	31	130 00	48	170 00	66	210 00	83	250 00	10 0		
510 0	15	910 0	32	131 00	49	171 00	66	211 00	83	251 00	10 1		
520 0	14	920 0	32	132 00	49	172 00	66	212 00	83	252 00	10 0		
530 0	15	930 0	32	133 00	49	173 00	67	213 00	84	253 00	10 1		
540 0	16	940 0	33	134 00	50	174 00	67	214 00	84	254 00	10 2		
550 0	16	950 0	34	135 00	51	175 00	68	215 00	85	255 00	10 2		
560 0	16	960 0	33	136 00	50	176 00	68	216 00	85	256 00	10 2		

TABVLA POSTERIOR.

THE LATTER TABLE.

Anni p 10000. collecti	Postpofi- tion. Lunę	Anni per 100000. collecti.	Postpofi- tion. Lunę	Anni per 1000000. collecti	Postpofi- tion. Lunę
10000	43	100000	430	1000000	4300
20000	86	200000	860	2000000	8600
30000	129	300000	1290	3000000	12900
40000	172	400000	1720	4000000	17200
50000	215	500000	2150	5000000	21500
60000	258	600000	2580	6000000	25800
70000	301	700000	3010	7000000	30100
80000	344	800000	3440	8000000	34400

Anni p 10000. collecti	Poftpofi- tion. Lune	Anni per 100000. collecti.	Poftpofi- tion. Lune	Anni per 1000000. collecti	Poftpo- fitiones Lunæ.
90000	387	900000	3870	9000000	38700
100000	430	1000000	4300	10000000	43000

[Margin: How the postposition of the Moon for any centesimal year is to be found.]

THE FORMER table is built up out of what we set out at the beginning of this Num. 9. Suppose, for example, you want to know the postposition of the Moon to be entered opposite the year 28400. Proceed thus. Subtract 1600 from 28400: 26800 remain. Divide these by 400: the quotient is 67, with nothing left over. Multiply this quotient by 3: the product is 201, which is the number of days taken out. Take away 2, and keep the remaining number, 199. Next subtract 1800 from the same year 28400: 26600 are left. Divide these by 2500: the quotient is 10, with 1600 left over. Multiply the quotient 10 by 8, and to the product 80 add 5 (since 300 is contained five times in the remainder 1600): the result is 85. Subtract this number from the 199 kept earlier, and the remainder gives the postposition of the Moon, 114 days, to be written opposite the year 28400.

The same procedure holds for all the rest. But the whole series is more easily generated from the postposition 0 of the year 1700 by means of the table of equation above, in Cap. 11. For whenever the same letter is to be retained in the following centesimal year, the same postposition is likewise written down; when a lower letter is taken, the postposition is increased by one; and when, finally, an upper letter is resumed, the postposition is decreased by one. You will grasp this readily if you set the former table of postpositions beside the letters of the table of equation above.

It would in fact have been enough to extend this table only as far as the year 11700, against which the postposition of the Moon 43 stands; for the postpositions of the remaining years are easily extracted from the latter table together with the former, even if the former had been carried no further than the year 11700, as we shall shortly explain. Nevertheless I chose to continue it all the way to the year 28400, so that the postposition of the Moon for any centesimal year before 28400 might be had more expeditiously — and that seems sufficient, since by then the table of equation will perhaps have to be altered. The reason is that those two years neglected in each span of 400 years will by that time amount to one whole day, as we wrote in Cap. 5, Num. 17, and so the equinox will have slipped from 21

March to 22. If, however, anyone wants postpositions of the Moon beyond the year 28400, the latter table must be brought in as well; it is very short, and its construction is extremely easy.

For since a postposition of the Moon of 43 days is owed to every 10000 years — divide 10000 by 400 and the quotient is 25, which multiplied by 3 gives 75 days taken out; again, divide 10000 by 2500 and the quotient is 4, which multiplied by 8 gives 32, and this number subtracted from the 75 days taken out leaves 43 — the postposition of the Moon 43 must be set against the year 10000, and one must go forward by continually adding it up to 1000000, which year has the postposition of the Moon 430 set against it. Then again, by continually adding 430, one proceeds up to 10000000, against which year is written the postposition of the Moon 4300, and so on.

Now suppose the postposition of the Moon for the year 27900 is sought. (Let us imagine that the former table has not been extended beyond the year 11700.) We shall take from the latter table the postposition 86 assigned to the year 20000, and join to it the postposition 27 set against the year 7900 in the former table. In this way we shall produce the postposition 113, which fits the proposed year 27900. Likewise, if the postposition of the Moon for the year 600000 is sought, we shall take from the latter table the postposition 2150 written against the year 500000, add to it the postposition 387 set against the year 90000 in the same table, and then, with the number 2537 thus made up, add the postposition 35 set against the year 10000 in the former table. By this procedure we produce 2572, the postposition owed to the proposed year 600000.

[Margin: So that the postposition of any centesimal year may be extracted, one must enter the former table once only, at the end — even if that year with which the entry is made is also to be found in the latter table.]

Note that in the last place we did not take the postposition 43 written against the year 10000 in the latter table, but the postposition 35 allotted to that same year 10000 in the former table. The reason is that in the latter table one must never take the whole number of the proposed year, but always a smaller one, so that in the last place the remaining number of years can be taken in the former table. For the latter table contains the postpositions of the Moon owed to those centesimal years simply, without regard to how great an interval separates each of those centesimal years from the Nativity of Christ; whereas in the former table are recorded the postpositions belonging to the centesimal years reckoned from the Nativity of Christ. So although in the latter table the postposition of 43 days is

written against the year 10000, in the former table a postposition of 35 days is set against the same year.

Therefore, when the centesimal year is very large, one should enter the latter table as often as can be done, provided a centesimal year is left over with which the last entry into the former table can be made. And this last entry into the former table must necessarily be made even if that centesimal year with which the last entry has to be made is also found described in the latter table. So you see that in the immediately preceding example the entry was made in the last place with the year 10000, even though this same year is contained in the latter table with a different postposition. Nor indeed should the entry into the former table be made twice with the year 10000 — first with the year 8000 and then with 2000, or first with 7000 and then with 3000.

3000, because then the postpositions 26 and 1, or 23 and 5, would be taken, which together make up postposition 27 or 28, and not the 35 owed to the year 10000. In short — to say it in a word — only one entry is to be made into the former table, and all the other entries, if there are several, must be made into the latter table.

For the rest, it is clear that the postposition 2572 of the last example belongs to the year 600000. Subtract 1600 from 600000 and 598400 remain; divide these by 400 and the quotient 1496 comes out; multiply this by 3 and the number of days omitted, 4488, is produced; subtract 2, therefore, and keep the remaining number 4486. Again, subtract 1800 from 600000 and 598200 are left; divide these by 2500 and 239 comes out; multiply this by 8 and it makes 1912; add 2 (because the remainder of the division, 700, contains 300 twice) and 1914 results. Take this at last from the number 4486 that was kept, and the remainder gives the postposition of the Moon 2572 for the year 600000.

Finally, let the postposition of the Moon for the year 1700600200 be sought. First, take from the latter table the postposition 4300000 for the year 1000000000. (For although this year is not written in the table, still the postposition 43000 for the year 10000000 is to be increased by the two figures 00, just as the year 10000000 has been increased by the two figures 00 to make the year 1000000000.) Next, the postposition 3010000 for the year 700000000. Likewise the postposition 2150 for the year 500000. (For if the postposition of the year 600000 were taken, the postposition of the remaining 200 years could not have been taken in the former table.) Likewise the postposition 387 for the year 90000, and finally the postposition 36 for the year 10200. All these postpositions gathered into one sum yield the postposition 7312573 for the proposed year 1700600200, as you see in this scheme.

Anni	Postpositiones.
1000000000	4300000
700000000	3010000
500000	2150
90000	387
10200	36
Summa	7312573

10 AND all of this, which has been said about the construction of the table of equation according to the mind of the author of the Calendar, would be true if all 30 epacts were set down in order in the Calendar — as they are placed in January, March, May, July, October, and December — and if the two epacts xxv and xxiiii never occupied the same day, as we see happen in February, April, June, August, September, and November. Yet that arrangement is necessary, so that the lunar months may be alternately of 30 and of 29 days, as we explained in *cap.* 10, *Num.* 3. For it has been established in this way: if one counts back, in retrograde order, from the epact xxi inclusive in January — the epact that corresponds to the capital letter B — the postposition of the Moon found from the table above, the epact is correctly found so long as that postposition is not greater than 27, because in that case we do not pass beyond 5 February, to which the two epacts xxv and xxiiii are assigned. But when the postposition of the Moon is greater than 27, some error arises in finding the epact, because it is not the epact xxiiii but xxiii that is placed under 5 February. Consequently the epact xxiii, with the capital letter D, will then correspond to golden number 3, and not the epact xxiiii with the capital letter E, when the postposition of the Moon is 28 — which will happen in the year 8200. Thus after the year 8100 the descent from the capital letter E must be made through two letters, as far as the capital D, and not through one only. The same thing happens further on at 5 April, 3 June, and so on.

[Margin: Why the author of the Calendar chose to propose his equation, deceptive though it is.]

THE author of the Calendar either did not notice this irregularity — or defect — in the equation of the epacts, or made little of it, because he judged it enough that no error be committed in finding the epact over many thousands of years. And since he had before his eyes only the 30 letters of the expanded table, where no two letters are found in the same cell, reason seemed to demand entirely that the Moon should always descend by one single day whenever it had to be postponed. But when I afterwards examined more carefully that table of the equation of the

epacts, extended according to the mind of the author of the Calendar to 300000 years after the year 1600 (for I have computed the mean new moons for very many thousands of years), I found that the new moons of the epacts diverge from the celestial new moons more than is right. And so, as I searched out the cause of this, and in order to satisfy detractors so far as can be done, I discovered — with God's help — a method by which the epacts may be found even for ages very far distant, at least to 100000 or even 200000 years, whose new moons do not differ much from the celestial new moons. Hence it is altogether necessary to set up the table of the equation of the epacts differently after the year 8100, so that it may agree over many ages, even ones very far distant. How this is to be done must now be taught. And this is one of the chief things we undertook, in the Letter to the Reader, to add to the Calendar of Luigi Lilio.

[Margin: That it is not simply necessary that the table of equation of the author of the Calendar be corrected.]

This is so, even though it is not simply necessary. For it is enough, as I said, that the equation prescribed according to the author's mind — uniform indeed and easy — should show the epacts correctly for some thousands of years. When later generations find that it no longer shows the true epacts (which will not happen before the year 8200), it will be easy to take another letter of the expanded table, either higher or lower, according as the new moons are found in the Calendar to have risen or fallen, as we shall teach at *Num.* 15, 16, and 19. So for that reason it does not seem expedient that a more difficult method of equation be proposed to the Church, especially since this does not stand in the way of the perpetuity of the Calendar, as we shall say at *Num.* 18. If, however, anyone is so curious that he is not content with this, but wants the equation to show the epacts correctly for the longer ages as well, he will achieve it in this way.

LET all 365 days of the whole year be written out in order, together with the months and with the 30 letters of the expanded table repeated over and over, as they correspond to the epacts in the Calendar, always placing two letters, F and E, alternately in the same cell, as the following table shows.

SEQVITVR TABVLA.

Table of the 365 days of the year with the letters of the expanded table
(continues from p. 151 onto p. 152)

Ianu.	1	2	3	4	5	6	7	8	9	10	11	12	13
	P	N	M	H	G	F	E	D	C	B	A	u	t

14	15	16	17	18	19	20	21	22	23	24	25	26	27	
f	r	q	p	n	m	l	k	i	h	g	f	e	d	
28	29	30	31	Febr.		32	33	34	35	36	37	38	39	40
c	b	a	P			N	M	H	G	FE	D	C	B	A
41	42	43	44	45	46	47	48	49	50	51	52	53	54	
u	t	f	r	q	p	n	m	l	k	i	h	g	f	
55	56	57	58	59	Mart.		60	61	62	63	64	65	66	67
e	d	c	b	a			P	N	M	H	G	F	E	D
68	69	70	71	72	73	74	75	76	77	78	79	80	81	
C	B	A	u	t	f	r	q	p	n	m	l	k	i	
82	83	84	85	86	87	88	89	90	Apr.		91	92	93	94
h	g	f	e	d	c	b	a	P			N	M	H	G
95	96	97	98	99	100	101	102	103	104	105	106	107	108	
F	D	C	B	A	u	t	f	r	q	p	n	m	l	
E														
109	110	111	112	113	114	115	116	117	118	119	120	Mai.		121
k	i	h	g	f	e	d	c	b	a	P	N			M
122	123	124	125	126	127	128	129	130	131	132	133	134	135	
H	G	F	E	D	C	B	A	u	t	f	r	q	p	

136	137	138	139	140	141	142	143	144	145	146	147	148	149
n	m	l	k	i	h	g	f	e	d	c	b	a	P

150	151	Iun.	152	153	154	155	156	157	158	159	160	161	162
N	M		H	G	FE	D	C	B	A	u	t	f	r

163	164	165	166	167	168	169	170	171	172	173	174	175	176
q	p	n	m	l	k	i	h	g	f	e	d	c	b

177	178	179	180	181	Iul.	182	183	184	185	186	187	188	189
a	P	N	M	H		G	F	E	D	C	B	A	u

190	191	192	193	194	195	196	197	198	199	200	201	202	203
t	f	r	q	p	n	m	l	k	i	h	g	f	e

204	205	206	207	208	209	210	211	212	Aug.	213	214	215	216
d	c	b	a	P	N	M	H	G		FE	D	C	B

217	218	219	220	221	222	223	224	225	226	227	228	229	230
A	u	t	f	r	q	p	n	m	l	k	i	h	g

23	23	23	23	23	23	23	23	23	24	24	24	24	
1	2	3	4	5	6	7	8	9	0	1	2	3	[blank]
f	e	d	c	b	a	P	N	M	H	G	F	E	[blank]

Sept.	244	245	246	247	248	249	250	251	252	253	254	255	256
	D	C	B	A	u	t	f	r	q	p	n	m	l

257	258	259	260	261	262	263	264	265	266	267	298	269	270
k	i	h	g	f	e	d	c	b	a	P	N	M	H

271	272	273	Oct.	274	275	276	277	278	279	280	281	282	283
G	FE	D		C	B	A	u	t	f	r	q	p	n

284	285	286	287	288	289	290	291	292	293	294	295	296	297
m	l	k	i	h	g	f	e	d	c	b	a	P	N

298	299	300	301	302	303	304	Nou.	305	306	307	308	309	310
M	H	G	F	E	D	C		B	A	u	t	f	r

311	312	313	314	315	316	317	318	319	320	321	322	323	324
q	p	n	m	l	K	i	h	g	f	e	d	c	b

325	326	327	328	329	330	331	332	333	334	Dec.	335	336	337
a	P	N	M	H	G	FE	D	C	B		A	u	t

338	339	340	341	342	343	344	345	346	347	348	349	350	351
f	r	q	p	n	m	l	k	i	h	g	f	e	d

352	353	354	355	356	357	358	359	360	361	362	363	364	365
c	b	a	P	N	M	H	G	F	E	D	C	B	A

HOC being the order observed, it will be easy, for any century whatever, to find the letter of the expanded table in whose line the epacts correspond to the golden numbers of that century. For take from the tables of the postpositions of the Moon the postposition that belongs to the century proposed, and add 9 to it — that is, the days by which the epact xxj, belonging to capital B, is preceded in January; the reason being that the anticipation of the Moon, beginning from the year 1900 (to which, in the table of equation above, capital B corresponds),

requires eight days over every span of 2500 years, as I said at the beginning of Num. 9. The number so formed will give the letter sought in the adjoining table of the year. Thus in the year 3400 the postposition of the Moon is 7; add 9 and you get 16. So the small letter q, under day 16, is the one to be taken in the expanded table for the year 3400. Again, in the year 1900 the postposition of the Moon is 1; add 9 and you get 10. Capital B, under day 10, is therefore the letter to be used then. Likewise for the years 1700 and 1800 the postposition of the Moon is 0, and adding 9 gives 9; so capital C, under day 9, is to be taken then. Further, in the year 28400 the postposition of the Moon is 114 — as it is also for the years 28200 and 28300 — and adding 9 gives 123. Capital G, then, under day 123, will serve us for the year 28400 just as much as for the years 28200 and 28300. Finally, in the years 84500 and 84600 the postposition is 356, and adding 9 gives 365. So under the last day of the year capital A is to be taken.

[Margin: A more accurate way of finding the letter of the expanded table for any century proposed.]

SI you note carefully, in the adjoining table, the days to which two letters, F and E, are attached — there are these six: 36, 95, 154, 213, 272, 331 — and write beside them, in the little table set alongside, the numbers 1, 2, 3, 4, 5, 6, we shall be able to find the letter of the expanded table for any century proposed from memory, without the preceding table of the days of the whole year: provided only that the number formed from the postposition of the Moon and 9 is not greater than 365, and that the order of the 30 letters of the expanded table is correctly held in mind. For if the number formed from the postposition of the Moon and 9 is less than 36, the first number of this little table, it is to be counted (30 being first thrown away, if 30 can be thrown away) from P inclusive in retrograde order; or else its complement to 30, first increased by two, is to be counted in the natural and forward order. Either way you will fall upon the letter you are looking for. But if it is greater than some one of the six numbers of this little table — provided it does not exceed 365 — then, all the 30s being thrown away, add to the remainder as many units as are written beside the number that is next smaller than that number formed from the postposition of the Moon and 9; and proceed with the sum as has been said, that is, counting it from P inclusive in retrograde order, or its complement to 30, two being first added, in the forward order. If, finally, the number formed from the postposition and 9 is equal to one of the 6 numbers of the said little table, nothing at all is to be counted: capital F is always to be taken. For example. In the year 3400, from the postposition of the Moon 7 and 9 you get 16. So if you count 16 letters from P inclusive, retrograde, you fall upon the small q, as you see here: P, N, M, H, G, F, E, D, C, B, A, u, t, f, r, q. You will

fall upon the same letter if you count in the natural order the complement of the number 16 to 30, which is 14, two being first added so as to make 16, as appears here: P, a, b, c, d, e, f, g, h, i, k, l, m, n, p, q.

[Margin: A more accurate way of finding the letter of the expanded table from memory.]

1	36
2	95
3	154
4	213
5	272
6	331

RVRSVS, in the year 6600 the postposition of the Moon is 21, and adding 9 gives 30. The thirtieth letter from P inclusive in retrograde order — namely the small a — is therefore the one sought. The complement of the number 30 to 30, which is 0, gives the same letter if 2 is first added and the result counted in the natural order, as here: P, a. And if from the number 30 so formed you throw away 30, nothing remains, and so nothing is to be counted from P; or else 30 are to be counted, and thus you will again light on the small letter a. This letter the complement of that remainder 0 — that is, 30 — will yield once more, if 2 is first added so as to make 32, that is (30 being thrown away) 2. Or again the complement of the number 30 to 30, which is 0, with 2 first added, if it be counted from P inclusive in the natural order, as before.

ITEM, in the years 28200, 28300 and 28400 the postposition of the Moon is 114, and adding 9 gives 123. The number next smaller than this in the adjoining little table is 95, which has the number 2 set before it. So, 30 being thrown away four times out of 123, if 2 be added to the remaining number 3 you get 5. Hence capital G, which is the fifth from P — as appears here: P, N, M, H, G — will then be in use. And if the complement of the number 5 to 30, namely 25, increased by two, be counted in the natural order, the same letter G is found, thus: P, a, b, c, d, e, f, g, h, i, k, l, m, n, p, q, r, f, t, u, A, B, C, D, E, F, G — which letter is likewise found under day 123.

PRÆTEREA, in the years 84500 and 84600 the postposition of the Moon is 356, and adding 9 gives 365. The number next smaller than this in the adjoining little table is 331. So, all the 30s being thrown away, let 6 be added to the remaining number

5 (for this is the number written beside 331 in the little table), making 11. For capital A, which is the eleventh from P — as here: P, N, M, H, G, F, E, D, C, B, A — will then be in use. And since the complement of the number 11 to 30 is 19, which with two added makes 21, the twenty-first letter from P in the forward order will again be A, as here: P, a, b, c, d, e, f, g, h, i, k, l, m, n, p, q, r, f, t, u, A — the same letter that was found above under day 365.

DENIQVE, in the years 49100, 49200 and 49300 the postposition of the Moon is 204, and adding 9 gives 213, a number that is found in the little table above. The letter will therefore be capital F.

NVMERI — those six numbers of the adjoining little table are easily committed to memory, provided only that the first, 36, is known. For the other five are built up by the continual addition of 59.

[Margin: How the six numbers of the adjoining little table may be known from memory.]

QVANDO the number composed of the postposition of the Moon and 9 exceeds the 365 days of a single year, it must be divided by 365, and the quotient kept. Then the letter is to be found from the remainder, as we did before with a number not greater than 365. Finally, after the letter found under the said remainder, as many elevens of letters are to be counted in the table above as there are units contained in the quotient kept back, taking the letters F, E, placed in one cell, for one only. But if in this counting you reach the end of the year and there are still some units left to count, you must not return to the beginning of the year, where P stands, but to the small letter u placed under day 12, and so finish the count. The reason for this is that after capital A, under the last day of the year, there does not follow the capital P set under the first day of the year — because the epacts do not keep a cycle in the Calendar, as I said at cap. 10, Num. 2 — but rather the small letter u, which occupies the eleventh place after capital P.

[Margin: What to do when the postposition of the Moon together with 9 is greater than 365.]

SI, however, on carrying out the division by 365, the quotient is found to be greater than 4, as many units are to be subtracted from the remainder of the division as there are fours contained in the quotient, because every fourth year comprises 366 days. And if the number indicating how many times four is contained in the quotient cannot be subtracted

from the remainder of the division, then 365 days are to be added, and one unit taken from the quotient. And if in that same quotient, once the division by 365 has been made, a number greater than 300 is found, as many further units must still be taken from the remainder as there are 300s found in that quotient — yet in such a way that, when the quotient is 2400, 8 are not taken away (although 300 is contained in it eight times) but 7, since it is to a span of 2500 years that the eight units of the Moon's anticipation are owed, not to an interval of 2400 years, as was said above. So too, when that quotient is greater than 19, all the 19s are to be thrown out of it, and for every unit in the remainder, eleven letters are to be counted in the table above after the letter found by the remainder of the division. All this will be clearer in examples.

SIT the letter to be sought for the century 90000. The postposition of the Moon is 379, and adding 9 gives 388. Divide by 365: the quotient is 1 and 23 are left over. So the small letter h, under day 23, will be the one to take. But because the quotient was 1, the eleventh letter after the h so found is to be taken, namely capital H, for the century 90000 proposed.

RVRSVS, in the year 200000 the postposition of the Moon is 852, and adding 9 gives 861. Divide by 365: the quotient is 2 and 131 are left over. The letter found below day 131 will therefore be t; after, after which, if the number twice 11 [?] on account of the quotient 2, you will light on capital G, to be used for the century proposed.

ITEM, in the year 301700 the postposition of the Moon is 1290, and adding 9 gives 1299. Divide by 365: the quotient is 3 and 204 are left over. The letter found below day 204 will therefore be the small d; and if after it three elevens, namely 33, be counted, capital P is found for the century given.

POSTREMO, in the year 90006000 the postposition of the Moon is 387018, and adding 9 gives 387027. Divide by 365: the quotient is 1060 and 127 remain. But since the quotient contains 4 in accordance with this number 265, which cannot be subtracted from the remainder, we shall add 365 to the remainder 127 so as to make 392. From this, if 264 be taken away — for since 365 has been added, 1 must be taken from the quotient 1060 so as to make 1059, in which 4 is contained not in accordance with the number 265, as before, but only in accordance with the number 264 — there are left 228. And if from these 3 are still taken away (because 300 is contained three times in the quotient 1059), there remain 225. The letter found below day 225 in the table above will therefore be the small m. But since, all the 19s being thrown out of the quotient 1059 above, 14 are left over, eleven letters must still be counted fourteen times over after the letter m found

under day 225 — that is, the 154th letter after that m, namely the small f (returning in the count, once the end of the year is passed, to the small letter u placed below day 21 [recte: 12; at p. 153 above "under day 12"]) — and this will answer to the century proposed.

VT the letter sought may be found still more easily, and to avoid having to count eleven letters repeatedly after the one found by the remainder of the division, we shall add 11 to that remainder as many times as required; for the letter sought will be found below the number so formed in the table above. And if the number so formed is greater than 365, then, 365 being thrown away, let the remainder be counted after capital A, below day 11. Thus, since in the first example eleven letters are to be counted once after the letter h below day 23, we shall add 11 to 23 to make 34; for capital H, below day 24 [recte: 34 — H stands at day 34], will be the letter sought. In the second example, since eleven letters are to be counted twice after the letter t below day 131, we shall add 22 to make 153; for capital G below day 153 will be the one we are seeking. Likewise in the third example: since eleven letters are to be counted three times after the letter d below day 204, if we add 33 to 204 we get 237, and below that day capital P is found. And finally in the fourth example, since eleven letters are to be counted fourteen times after the letter m under day 225, we shall multiply 11 by 14 and add the resulting number 154 to 225, making 379. Throwing away 365, there are left 14. The small letter f, then, which is the fourteenth after A placed below day 11, will be the letter desired.

[Margin: An easy way of finding the letter when eleven letters have to be counted several times over.]

INVENTA the letter of the expanded table, as we have shown, one at once finds in its line the epact answering to any golden number, as was said above in the use of the table of equation. On this principle, in the last example, there will be found in the line of the small letter f the epact xxj, answering to golden number 18 of the year 90006000.

[Margin: A more accurate way of finding the epact than the one handed down above at Num. 5.]

CÆTERVM, all this great labour spent on tracking down the epacts over so many thousands of years is vain and fruitless, as I said a little earlier, before setting out the construction of the table of the days of the year. For since it is uncertain whether the Moon's anticipation of one day in $312\frac{1}{2}$ years, and of 8 days in 2500 years — and the Sun's of 3 days in 400 years — will correspond to the celestial

motions for so long a time or not, this care may with perfect right be left to posterity, who will easily be able, from what we are about to write at Num. 15, 16 and 19, to set up the equation in another way, one that suits their own century. For anyone will readily convince himself that it is exceedingly difficult, not to say impossible, to prescribe a scheme of equation — even using the device here set out — that will agree with the celestial motions after many thousands of years (as regards the fourteenth Moons, which is the main point), if he considers attentively that not a few small fractions are omitted in the calculation of the individual lunations, and that over hundreds of thousands of years these can introduce no small error. Add to this that those 23 days and 17 hours by which, over every span of $312\frac{1}{2}$ years, we anticipate the equation of the Moon, grow in 481436 years to 100 years; and consequently, after so many years, the equation must be thrown forward into the next following centesimal year, just as after 2400 years, as we wrote at cap. 8, Num. 4, and cap. 11, Num. 11. A plain example is certainly to be had in the year 90006000, in which the epact was found to be xxj, indicating a new moon on 10 March, whereas the calculation gives that same new moon on 27 March. Let us be content, then, if our equation does not differ much from the truth as far as the year 100000, or even 200000.

[Margin: It is vain to look for the letter of the expanded table beyond 100000 or 200000 years by the foregoing rules.]

SECVNDVM what we shall now explain, the table of equation of the epacts after the year 8100 will have to be set up otherwise than was done above at cap. 11 — for in the table above, at cap. 11, it is rightly constituted as far as the year 8100 inclusive. This will be done if, for each centesimal year, the letter of the expanded table is found by way of the Moon's postposition, as we showed above after the table of the days of the year. We shall, however, continue the table only as far as the year 28400, because perhaps after that year the equinox will no longer cling to 21 March, on account of the day produced by the two years neglected in 402 years, as I said at cap. 5, Num. 17; and so the table of equation will then have to be altered again, so that it seems pointless to extend it further, if it cannot be of further use unless it is corrected. It will not be difficult, though, to extend it beyond 28400, if the postpositions of the Moon are rightly considered; or it will be extended still more easily by the table of cap. 11. For the letters advance in the following table of equation in exactly the same retrograde order that they keep in the table of equation above: only, below F, capital D is to be placed at alternate points, and not E. Thus you see that for the year 8100 the letter prefixed in the table above is capital

F, but that for the year 8200 the letter D, and not E, stands in the following table. Then, below the capital F next following, prefixed to the year 14900, E is placed for the year 15000; but below another following capital F, set before the year 21800, D is again written, and not E, and so on. And once the equation is set up in this way, the cycle of 300000 years no longer holds, as it did in the table of equation above.

NEMINI should it seem surprising that sometimes, on account of this new table of equation, the descent in the expanded table is made through two lines — namely from F to D, from the year 8100 to the year 8200, and from the year 21800 to the year 21900, and so on, as will be plain in the following table. For even though on this reckoning not a few new moons seem to be postponed more than is right, yet unless it were done, very many new moons would anticipate their seats more than is proper, and their fourteenth days — the mean full moons — would be lost by more than a day. And it is clear that the error is smaller in a postposition of the fourteenth Moon than in an anticipation.

[Margin: That the descent in the expanded table is sometimes rightly made through two lines.]

Let these be the examples. In the year 8300 the golden number is 17. The epact, according to the following table, is xxvij, which places the fourteenth Moon on 16 April. Now the mean full moon falls on 16 April, at about hour 6 from noon, which agrees with the Canons. But the epact according to the table of equation above is xxviii, whose fourteenth Moon has its seat on 15 April, before the due time. Again, in the year 8303 both the golden number and the epact are 1 from the following table, and the fourteenth Moon falls on 12 April; while the mean full moon falls on 12 April at about hour 21 after noon, as the Canons require. The table above gives epact ij and the fourteenth Moon on 11 April, contrary to the Canons. Finally — to pass over many other examples — in the year 8305 the golden number is 3 and the epact xxiiij in the following table; the fourteenth Moon falls on 21 March, and the mean full moon on 21 March at about hour 15 from noon, within the Paschal limits. But the table above yields epact xxiiiij, whose fourteenth Moon falls on 18 April, while the mean full moon falls on 20 April at hour 3 from noon, outside the Paschal limits — so that according to the table above Easter would be celebrated in the second month. Rightly, then, is the descent in the expanded table sometimes made through two letters, as has been said.

IAM if anyone should wish to find the letter suited to any century even beyond the year 28400, he will easily achieve it if he extends the following table of

equation according to what we have laid down; or, if he prefers not to extend it, if he inspects carefully the little table that follows and uses the table of equation of cap. 11 — which we have left entire in its place, partly because by it we shall hunt down the corrected epacts as well, as we shall show; partly so that the difference between that equation and this might appear; partly also so that the uniform progression in equating the epacts might be evident, were it not interrupted by the pairs of epacts placed in a single cell; but chiefly because in it are recorded the days removed at each centesimal year, which in fact are not seldom put to use, as I said above. This is the rule to be held to.

[Margin: Why the table of equation of 300000 years, set out above at cap. 11, was proposed, even though it is misleading.]

1	2	3	4	5	6	7	8	9
8200	21900	35700	49400	63100	76700	90600	104200	117900
10	11	12	13	14	15	16	17	18
131700	145400	159100	172900	186600	200300	214100	227800	241500
19	20	21	22	vsque ad [as far as]				310000
255100	269000	282600	296300					

From any centesimal year of this little table up to the next, count, after the letter which the table of equation above at cap. 11 offers, as many letters in retrograde order as there are units in the number placed above the centesimal year of this little table. The last letter will be the one to be used for the given century. For example: the letters from the year 1600 up to 8200 exclusive are to be taken just as they stand in the table of equation above. But if the year 20000 is proposed, one letter of the table above must be counted after the letter d — namely as far as c — on account of the 1 above 8200. Likewise, if the year 267800 is given, nineteen letters of the table above must be counted after the letter t, as far as capital N, on account of the 19 units placed above 255100, as appears here: f, r, q, p, n, m, l, k, i, h, g, f, e, d, c, b, a, P, N. And so with the rest.

[Margin: An easy way of finding the letter of the expanded table, as far as the year 310000.]

TABLE OF EQUATION, CORRECTED, AFTER THE YEAR 8100 UP TO THE YEAR 28400

(TABVLA ÆQVATIONIS EMENdata poſt annum 8100. vſque ad annum 28400.)

This table is printed **sideways** on pp. 172–173: the leaf must be turned to read it, and the running head on p. 172 is turned with it; the sideways setting continues on p. 173. The printer sets the table in three parallel blocks across the page; the sequence runs continuously from 8200 through 21300 on this page. Each block has four columns: the index letter, the centesimal year, the note Biſſ. (bissextile), and the column of lunar marks (☾, ☾☾, †).

Letter	Year	Biſſ.	Mark
D	8200		
D	8300		☾
D	8400	Biſſ.	
C	8500		
C	8600		☾
B	8700		
B	8800	Biſſ.	
B	8900		☾
A	9000		
u	9100		
u	9200	Biſſ.	
u	9300		☾ ☾
t	9400		
f	9500		
t	9600	Biſſ.	☾
f	9700		
r	9800		
r	9900		☾
r	10000	Biſſ.	
q	10100		
q	10200		☾
p	10300		

Letter	Year	Biff.	Mark
p	10400	Biff.	
p	10500		☾
n	10600		
m	10700		
n	10800	Biff.	☾
m	10900		
l	11000		
l	11100		☾
l	11200	Biff.	
k	11300		
k	11400		☾
i	11500		
i	11600	Biff.	
h	11700		†
h	11800		☾ ☾
g	11900		
g	12000	Biff.	
g	12100		☾
f	12200		
e	12300		
f	12400	Biff.	☾
e	12500		
d	12600		
d	12700		☾
d	12800	Biff.	
c	12900		
c	13000		☾
b	13100		
b	13200	Biff.	
b	13300		☾
a	13400		

Letter	Year	Biff.	Mark
P	13500		
a	13600	Biff.	☾
P	13700		
N	13800		
N	13900		☾
N	14000	Biff.	
M	14100		
H	14200		
H	14300		☾ ☾
H	14400	Biff.	
G	14500		
G	14600		☾
F	14700		
F	14800	Biff.	
F	14900		☾
E	15000		
D	15100		
E	15200	Biff.	☾
D	15300		
C	15400		
C	15500		☾
C	15600	Biff.	
B	15700		
B	15800		☾
A	15900		
A	16000	Biff.	
A	16100		☾
u	16200		
t	16300		
u	16400	Biff.	☾
t	16500		

Letter	Year	Biff.	Mark
f	16600		
r	16700		
f	16800	Biff.	☾ ☾
r	16900		
q	17000		
q	17100		☾
q	17200	Biff.	
p	17300		
p	17400		☾
n	17500		
n	17600	Biff.	
n	17700		☾
m	17800		
l	17900		
m	18000	Biff.	☾
l	18100		
k	18200		
k	18300		☾
k	18400	Biff.	
i	18500		
i	18600		☾
h	18700		
h	18800	Biff.	
h	18900		☾
g	19000		
f	19100		
f	19200	Biff.	
f	19300		☾ ☾
e	19400		
d	19500		
e	19600	Biff.	☾

Letter	Year	Biff.	Mark
d	19700		
c	19800		
c	19900		☾
c	20000	Biff.	
b	20100		
b	20200		☾
a	20300		
a	20400	Biff.	
a	20500		☾
P	20600		
N	20700		
P	20800	Biff.	☾
N	20900		
M	21000		
M	21100		☾
M	21200	Biff.	
H	21300		

The table continues.

Letter	Year	Biff.	Mark
H	21400		☾
G	21500		
G	21600	Biff.	
F	21700		†
F	21800		☾ ☾
D	21900		
D	22000	Biff.	
D	22100		☾
C	22200		
B	22300		
C	22400	Biff.	☾

Letter	Year	Biff.	Mark
B	22500		
A	22600		
A	22700		☾
A	22800	Biff.	
u	22900		
u	23000		☾
t	23100		
t	23200	Biff.	
t	23300		☾
f	23400		
r	23500		
f	23600	Biff.	☾
r	23700		
q	23800		
q	23900		☾
q	24000	Biff.	
p	24100		
n	24200		
n	24300		☾ ☾
n	24400	Biff.	
m	24500		
m	24600		☾
l	24700		
l	24800	Biff.	
l	24900		☾
k	25000		
i	25100		
k	25200	Biff.	☾
i	25300		
h	25400		
h	25500		☾

Letter	Year	Biff.	Mark
h	25600	Biff.	
g	25700		
g	25800		☾
f	25900		
f	26000	Biff.	
f	26100		☾
e	26200		
d	26300		
e	26400	Biff.	☾
d	26500		
c	26600		
b	26700		
c	26800	Biff.	☾ ☾
b	26900		
a	27000		
a	27100		☾
a	27200	Biff.	
P	27300		
P	27400		☾
N	27500		
N	27600	Biff.	
N	27700		☾
M	27800		
H	27900		
M	28000	Biff.	☾
H	28100		
G	28200		
G	28300		☾
G	28400	Biff.	

11. Now, from the year of the Lord 1600 onward, you will find the epact quicker than one can say it, by means of the following table, which is built

up as follows. In six lines write out the expanded years from year 0 up to year 99, putting nineteen years in each line — except the sixth line, in which only five years are set down. Below these, on the left, place all the centesimal years in order, beginning with the year 1600. Next, find the golden numbers of the centesimal years, and by means of them look up the epacts of those same centesimal years, either in the expanded table or in the perpetual cycle of the epacts with the table of equation applied. Write those epacts alongside the centesimal years, each alongside its own, under the expanded years 0, 19, 38, 57, 76, 95.

From these the remaining epacts of each line are formed by continually adding 11, always casting out 30 whenever the sum comes to more than 30; and when the sum is exactly 30, set down the epact *. Observe this one thing, however: to the epact that answers to golden number 19 you must add 12, not 11. Likewise, when the epact 25 answers to a golden number greater than 11, set down that 25 which is customarily written in a different colour or in a different character.

In fact you will set these same epacts out more easily by the following method. In the expanded table take the letter that matches the given centesimal year, and put the epact of that letter which answers to the golden number of that same centesimal year into the first cell after that centesimal year; then put the epacts that follow in the same line into the remaining cells, returning to the beginning of the line whenever that is needed. This table can be extended indefinitely, just as the present one has been extended from the year of the Lord 1600 up to the year 3900.

[Margin: Construction of the following table for finding the epact.]

FINDING THE EPACTS FROM THE YEAR OF THE LORD 1600

(EPACTARVM INVENTIO AB ANNO DOMINI 1600.)

The table fills the whole page and is printed **upright** — title, heading numerals, row labels and body all run in the page's normal reading orientation; only the narrow stub head is turned (see the parsing note). The left-hand column is headed **Anni expansi** (expanded years) and carries the twenty-four centesimal years 1600 to 3900 as its row labels. Across the head run nineteen columns, each headed by the stack of expanded years that share it (the epact repeating on a nineteen-year period); the sixth line of expanded years runs only 95–99, so only the first five columns carry a sixth heading number. The cells hold the epacts in lowercase Roman numerals, with * for the epact 30 and an Arabic 25 for the

special epact 25 that Clavius has just said is written "in a different colour or character."

Column headings (verbatim):

Col.	Expanded years heading that column
0	0, 19, 38, 57, 76, 95
1	1, 20, 39, 58, 77, 96
2	2, 21, 40, 59, 78, 97
3	3, 22, 41, 60, 79, 98
4	4, 23, 42, 61, 80, 99
5	5, 24, 43, 62, 81
6	6, 25, 44, 63, 82
7	7, 26, 45, 64, 83
8	8, 27, 46, 65, 84
9	9, 28, 47, 66, 85
10	10, 29, 48, 67, 86
11	11, 30, 49, 68, 87
12	12, 31, 50, 69, 88
13	13, 32, 51, 70, 89
14	14, 33, 52, 71, 90
15	15, 34, 53, 72, 91
16	16, 35, 54, 73, 92
17	17, 36, 55, 74, 93
18	18, 37, 56, 75, 94

Body of the table (columns numbered as above):

Anni												1	1	1	1	1	1	1	1
expan																			
fī	0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8
1600	x	x	vi	x	x	x	x	i	x	x	v	x	x	vi	xi	j	xi	x	ii
	v	x	j	v	xi		xi	j	i	xi		v	x	ii	x		i	xi	ij
		vj		ii	x				i	ii		i	vi					ij	
				j					j	j			i						
1700	ix	x	j	x	x	ii	x	x	v	x	*	x	x	ii	xi	x	vj	x	x

Anni expan fi	0	1	2	3	4	5	6	7	8	9	10	1 1	1 2	1 3	1 4	1 5	1 6	1 7	1 8
		x		ij	xi ij	ij	v	x v j	i j	vi ij		i	xi i	i	ii i	x v		vi j	x vi ij
1800	ii ij	x v	x x vj	v ij	x vi ij	*	xj	x x i j	i i j	xi ii j	xxv	v i	x vi i	x x vi ij	ix	x x	j	xi j	x xi ij
1900	x xi x	x	x xj	ij	xi ij	x xi ii j	v	x v j	x x v i j	vi ii	[num eral: ?]	*	xi	x xi i	ii i i j	x i i j	2 5	vj	x vi j
2000	x xi ii j	v	x vj	x x v ij	vi ij	xi x	*	x j	x x i j	ii i	xiiiij	2 5	vi	x vi i	x xi x	x x x	x xj	ij	xi j
2100	xi x	*	xj	x x ij	ii j	xi ii j	2 5	v j	x v i j	x xi x	x	x x i	ij	xi ii	x xi ii j	v vj	x x	x vi j	vi ij
2200	xi ii ii ij	x x ij	v	x vj	x x vi ij	ix	x x	j	x i j	x xi ii	iiiij	x v	x x vi	vi i ij	x vi i x	x x x	x xj	x	ij
2300	vi ij	x i x	*	xj	x xi j	ii i j	xi ii j	x x v	v j i	x vi i	[num eral: ?]	i x	x x	j	xi j	x x i i j	ii ii	x v	x x vi j
2400	ii ij	x v	x x vj	v ij	x vi ij	x xi x	x	x x j	i j	xi ii	xxiiiij	v	x vi	x x vi ii	ix	x x	j	xi j	x xi ij
2500	x	i	x	j	xi	x	ii	x	x	vi	xix	*	xi	x	ii	x	x	vj	x

Anni expan fi	0	1	2	3	4	5	6	7	8	9	10	1 1	1 2	1 3	1 4	1 5	1 6	1 7	1 8
	x vi ij	x	x		j	xi ij	ij	v	x v i j	ij				xi i	i i i	i v	x		vi j
2600	x xi j	ii j	xi ii j	x x vj	vi j	x vi ij	x xi x	x	x x j	ij	xiiij	x x ii ii	v	x vi vi i	x x i i	v i i	xi x	*	xj
2700	x vi ij x	x x i	x xj	x xj	ij ij	xi xi ii j	x xi ii j	v v j	x x j	x x vi j	[num eral: ?]	x i x	*	xi xi i	x xi i i	i ii i	xi ii i	x x vj	vi j
2800	xi ii ij	x x ii ij	v x	x vj vi j	x x vi j	vi ij x	xi x	*	x j	x xi i	iiij	x ii ii	x x vi	vi i vi i	x vi ii x	x x i	x xi	x xj	ij
2900	vi j	x v ii j	x xi x	x xj	x xj	ij ij	xi ij	x x v	v j	x vi j	xxviiij	i x	x x	j	xi i	x x i	ii ij	x v	x x vj
3000	ij	x ii j	x x v	vj vi j	x vi j	x x ix x	ix x	x x	j i	xi i	xxiiij	ii ii	x v	x x vi	vi i i	x v i xi	x xi x	x xj	x
3100	x x vi j	v ii j	xi x	*	xj	x xi j	ii j	x i i j	2 5	vi	xvij	x x v ii i	ix x	x x	j	x i i	x xi ii i	v	x vj
3200	x xi j	ii j	xi ii i	2 5	vj	x vi j	x x vi	i x	x x	j	xij	x x ii	v	x vi	x vi	v i	xi x	*	xj

Anni expan fi	0	1	2	3	4	5	6	7	8	9	10	1 1	1 2	1 3	1 4	1 5	1 6	1 7	1 8
							ij					ii			i	i			
3300	x vi j	x x v ii j	ix 	x x 	j 	xi j 	x xi ii j	v 	x v j	x x vi j	viiij	x i x	*	xi	x xi i	i i j	xi ii j	2 5	vj
3400	xj	x x ii j	ii ij	x v	x x vj	vi j	x vi ij	x x i x	x x 	x x xj	ij	x ii i	x xi ii i	v	x vi 	x x v i	vi ij	xi x	*
3500	vj	x v ij	x x vi ij	i x 	x x 	j 	xi j 	x x i i j	i i j	x v	xxvj	v ii	x vi ii	x xi x	x 	x x i	ii j	xi ii j	x x v
3600	ij	x ii j	x xi ii j	v 	x vj	x x vi j	vi ij x	x i x	*	xi	xxiiij	ii ii	x v	x x vi	vi i v i i	x x i xi x	x xi x	x xj	x
3700	x x vj	v ij	x vi ij	x x i x	x 	x xi j	ii j 	x i i i	x x v	vj	xvij	x x v ii i	ix 	x x	j 	x i i	x xi ij	ii ii	x v
3800	x xj	ij	xi ij	x x ii ij	v 	x vj	x x vi j	v i i j	x i x	*	xj	x x ii	ii j	xi ii i	2 5	v i j	x vi j	x x vi ii	ix
3900	x vj	x x v ij	vi ij	x i x	*	xj	x xi j	i i i	x i i	2 5	vj	x v ii	x x vi ii	ix 	x xi j	i j	xi ij	x xi ii j	v

Anni expan fi	0	1	2	3	4	5	6	7	8	9	10	1	1	1	1	1	1	1	
												1	2	3	4	5	6	7	8

In this table you will find the epact of any year proposed, if you take the given centesimal year on the left and, at the head, the expanded year following that centesimal. The epact of the given year stands written in the cell where the two meet. Thus for the year 1627 the epact is xiiij. For the year 2085 the epact is iiij. For the year 2106 the epact is 2 5, printed in a different character. Finally, for the year 3000 the epact is ij, opposite the year 3000, under the expanded year 0.

[Margin: Finding the epacts from the temporary tables.]

To make the work easier still, I set out here a number of temporary tables for the various centuries, in which one finds at once the epact answering to the golden number of any year proposed. To find the epact for a given year, then, one must first look for that year's golden number; once it has been found, the epact will appear immediately in the table serving that century, under that golden number. For example: since in the year 837 the golden number is 2, you will find in the third table — the one in use from the year 800 to the year 1099 inclusive — the epact xx, which at that time indicated the new moons, even though the golden number in the Calendar of the Council of Nicaea marked those same new moons a little later. The reason is that from the time of that Council down to the year 837 the new moons anticipated their places in the Calendar; and so the golden numbers set out in that same Calendar will show the new moons of the year 837 later than the epact xx that has here been found.

[Margin: Construction of the temporary tables for finding the epacts.]

The construction of these tables, moreover, is perfectly straightforward. In the table of the equation of the epacts described in chapter 11, take the letter matching the given centesimal year, or the given year, at which the proposed table begins (I have attached that letter to each table); and from the expanded table extract the epact standing on the line of that same letter and answering to the golden number of that same centesimal year or year. Then all 19 golden numbers are to be written across the top of the table, beginning from the golden number of that centesimal year or year, and beneath the first golden number the epact answering to it. From that epact all the rest are formed by continually adding 11. Only to the epact under golden number 19 must 12 be added, in order to form the epact under golden number 1. At the foot of each table I have also

written the years at which that same table begins, so as to make the finding of the epacts easier and to spare us having to work out the golden number for each year before working out the epact. For if in any table you begin counting from the year set at the foot of the table which is next smaller than the year offered — or else from the year at which the use of the table begins, in case the year offered happens to be smaller than the smallest of the years set at the foot of the table — and count up to that same proposed year, the count will end in the cell of the golden number and of the epact of the year proposed. For instance, if the year 4328 is proposed, one must count in the 22nd table from the year 4314 up to the year 4328, which falls on golden number 16 and epact *iiij*. And so with the rest. So, as you see, these same tables also yield the golden number of the year proposed: in the example just given, what was found was not only the epact *iiij*, which indicates the new moons in the year 4328, but also the golden number 16 of that same year. In this way any number of further temporary tables can be built.

[Margin: Finding the golden number by means of the temporary tables.]

I. Ab anno Domini 0. vsque ad annum 319. inclusiue. N. (I. From the year of the Lord 0 up to the year 319 inclusive. N.)

Aur. num.	1	2	3	4	5	6	7	8	9	10	11
Epactæ.	<i>vij</i>	<i>xviiij</i>	<i>xxix</i>	<i>x</i>	<i>xxj</i>	<i>ij</i>	<i>xiiij</i>	<i>xxiiiij</i>	<i>v</i>	<i>xvj</i>	<i>xxviij</i>

Aur. num.	12	13	14	15	16	17	18	19
Epactæ.	<i>viiij</i>	<i>xix</i>	<i>*</i>	<i>xj</i>	<i>xxij</i>	<i>iiij</i>	<i>xiiiij</i>	25

1	3	5	7	9											
9	8	7	6	5	114	133	152	171	190	209	228	247	266	285	304

I I. Ab anno Domini 320. vsque ad annum 799. inclusiue. P. (II. From the year of the Lord 320 up to the year 799 inclusive. P.)

		1													
Aur. num.	17	8	19	1	2	3	4	5	6	7		8			
Epactæ.	<i>iiij</i>	<i>x</i>	<i>xxvj</i>	<i>viiij</i>	<i>xix</i>	<i>*</i>	<i>x</i>	<i>xxij</i>	<i>iiij</i>	<i>xiiiij</i>		<i>xx</i>			
		<i>v</i>					<i>j</i>					<i>v</i>			

Aur. Num.	9	10	11	12	13	14	15	16
Epactæ.	vj	xvij	xxviiij	ix	xx	j	xij	xxiiij

339	358	377	396	415	434	453	472	491	510	529	548	567	586	605
624	643	662	681	700	719	738	757	776	795					

III. Ab anno Domini 800. vsque ad annum 1099. inclusiue. a. (III. From the year of the Lord 800 up to the year 1099 inclusive. a.)

Aur. num.	3	4	5	6	7	8	9	10	11	1	2	13
Epactæ.	j	ij	xxiiij	iiiij	x	xxvj	vij	xviiij	xxix	x	xxj	
					v							

Aur. num.	14	15	16	17	18	19	1	2
Epactæ.	ij	xiiij	xxiiiij	v	xvj	xxvij	ix	xx

81	83	85	87	89	91	93	95	97	99	100	102	104	106	108
9	8	7	6	5	4	3	2	1	0	9	8	7	6	5

IIII. Ab anno Domini 1100. vsque ad annum 1399. inclusiue. b. (IIII. From the year of the Lord 1100 up to the year 1399 inclusive. b.)

Aur. Num.	18	19	1	2	3	4	5	6	7	8	9
Epactæ.	xvij	xxviiij	x	xx	ij	xiiij	xxiiiij	v	xv	xxvij	viiij
				j					j		

Aur. num.	10	11	12	13	14	15	16	17
Epactæ.	xix	*	xj	xxij	iiij	xiiiij	25	vj

1119	1138	1157	1176	1195	1204	1233	1252	1271	1290	1309	1328
1347	1366	1385									

V. Ab anno Domini 1400. vsque ad 4. diem Octobris anni 1582. inclusiue, hoc est, vsque ad correctionem Calendarij. c (V. From the year of the Lord 1400 up

to 4 October of the year 1582 inclusive — that is, up to the correction of the Calendar. c)

		1									
Aur. num.	14	5	16	17	18	19	1	2	3	4	5
Epactæ.	iiij	x v	xxvj	vij	xviiij	xxix	x j	xxij	iiij	xiiij	xx v

Aur. num.	6	7	8	9	10	11	12	13
Epactæ	vj	xvij	xxviiij	ix	xx	j	xij	xxiiij

1419	1438	1457	1476	1495	1514	1533	1552	1571

V I. A die 5. Octobris anni 1582. hoc est, à correctione Calendarij, vsque ad annum 1699. inclusiue. D. (VI. From 5 October of the year 1582 — that is, from the correction of the Calendar — up to the year 1699 inclusive. D.)

					1		1			1	
Aur. num.	6	7	8	9	0	11	2	13	14	5	16
Epactæ	xxvj	vij	xviiij	xxix	x	xxj	ij	xiiij	xxiiij	v	xvj

Aur. num.	17	18	19	1	2	3	4	5
Epactæ	xxvij	viiij	xix	j	xij	xxiiij	iiij	xv

1601	1620	1639	1658	1677	1696

VII. Ab anno Domini 1700. vsque ad annum 1899. inclusiue. C (VII. From the year of the Lord 1700 up to the year 1899 inclusive. C)

	1	1	1				1				
Aur. num.	0	1	2	13	14	15	6	17	18	19	1
Epactæ.	i x	x x	j	xij	xxiiij	iiij	x v	xxvj	vij	xviiij	*

Aur. Num.	2	3	4	5	6	7	8	9
Epactæ	xj	xxij	ij	xiiij	xxv	vj	xvij	xxviiij

1719	1738	1757	1776	1795	1814	1833	1852	1871	1890

VIII. Ab anno Domini 1900. vsque ad annum 2199. inclusiue. B. (VIII. From the year of the Lord 1900 up to the year 2199 inclusive. B.)

Aur. num.	1	2	3	4	5	6	7	8	9	10	11
Epactæ.	xxix	x	xxj	ij	xiiij	xxiiij	v	xvj	xxvij	viiij	xix

Aur. num.	12	13	14	15	16	17	18	19
Epactæ.	*	xj	xxij	ij	xiiij	25	vj	xvij

1919	1938	1957	1976	1995	2014	2033	2052	2071	2090	2109	2128
2147	2166	2185									

I X. Ab anno Domini 2200. vsque ad annum 2299. inclusiue. A (IX. From the year of the Lord 2200 up to the year 2299 inclusive. A)

			1								
Aur. num.	16	17	8	19	1	2	3	4	5	6	7
Epactæ	xiiij	xxiiij	v	xvj	xxviiij	i	x	j	xij	xxiiij	iiiij
						x	x				

Aur. num.	8	9	10	11	12	13	14	15
Epactæ	xv	xxvj	vij	xviiij	xxix	x	xxj	ij

2219	2238	2257	2276	2295

X. Ab anno Domini 2300. vsque ad annum 2399. inclusiue. u. (X. From the year of the Lord 2300 up to the year 2399 inclusive. u.)

Aur. num.	2	3	4	5	6	7	8	9	1 0	11	12
Epactæ.	viiij	xix	*	x j	xxij	iiij	xiiiij	xx v	v j	xvij	xxviiij

Aur. num.		13	14	15	16	17		18		19	1
Epactæ.		ix	xx	j	xij	xxiiij		iiiij		xv	xxvij

2319	2338		2357		2376		2395

X I. Ab anno Domini 2400. vsque ad annum 2499. inclusiue. A (XI. From the year of the Lord 2400 up to the year 2499 inclusive. A)

Aur.num.	7	8	9	10	11	12	1 3	14	1 5	16	17
Epactæ.	iiiij	x v	xxvj	vij	xviiij	xxix	x	xxj	ij	xiiij	xxiiiij

Aur. Num.		18	19	1		2	3	4	5	6
Epactæ.		v	xvj	xxviiij		ix	xx	j	xij	xxiiij

2419	2438		2457		2476		2495

X I I. Ab anno Domini 2500. vsque ad annum 2599. inclusiue. u (XII. From the year of the Lord 2500 up to the year 2599 inclusive. u)

Aur. num.	12	1 3	1 4	1 5	16	17	18	1 9	1	2	3
Epactæ	xxviiij	i x	x x	j	xij	xxiiij	iiiij	x v	xxvij	viiij	xix

Aur. num.	4	5	6	7	8	9	10	11
Epactæ	*	xj	xxij	iiij	xiiiij	xxv	vj	xvij

2519	2538	2557	2576	2595

X I I I. Ab anno Domini 2600. vsque ad annum 2899. t (XIII. From the year of the Lord 2600 up to the year 2899. t)

Aur. num.	17	18	19	1	2	3	4	5	6	7	8
Epactæ.	xxij	ij	xiiij	xxvj	vij	xviiij	xxix	x	xxj	ij	xiiij

Aur. num.	9	10	11	12	13	14	15	16
Epactæ	xxiiij	v	xvj	xxviij	viiij	xix	*	xj

2619	2638	2657	2676	2695	2714	2733	2752	2771	2790	2809	2828
2847	2866	2885									

X I V. Ab anno Domini 2900. vsque ad annum 3099. inclusiue. f (XIV. From the year of the Lord 2900 up to the year 3099 inclusive. f)

Aur.num.	13	14	15	1	17	1	8	19	1	2	3	4
Epactæ.	vij	xviiij	xxix	x	xxj	ij	xiiij	xx	v	xviij	xxviiij	
								v	j			

Aur. num.	5	6	7	8	9	10	11	12
Epactæ.	ix	xx	j	xij	xxiiij	iiiij	xv	xxvj

2919	2938	2957	2976	2995	3014	3033	3052	3071	3090

XV. Ab anno 3100. vsque ad annum 3399. inclusiue. r (XV. From the year 3100 up to the year 3399 inclusive. r)

Aur. num.	4	5	6	7	8	9	10	11	1	1	
Epactæ.	xxvii	viii	xix	*	x	xxii	iii	xiiiij	2	3	14
					i				5	i	

Aur.num.	15	16	17	18	19	1	2	3
Epactæ	xxviii	ix	xx	i	xii	xxiii	v	xvi

3119	3138	3157	3176	3195	3214	3233	3252	3271	3290	3309	3328
3347	3366	3385									

XVI. Ab anno 3400. vsque ad annum 3499. inclusiue. q (XVI. From the year 3400 up to the year 3499 inclusive. q)

	1										1
Aur. num.	9	1	2	3	4	5	6	7	8	9	0
Epactæ	x	xxiii	iiii	x	xxvi	vii	xviii	xxix	x	xxi	ii
	i			v							

Aur.num.	11	12	13	14	15	16	17	18
Epactæ	xiii	xxiiii	v	xvi	xxvii	viii	xix	*

3419	3438	3457	3476	3495

XVII. Ab anno 3500. vsque ad annum 3599. inclusiue. p (XVII. From the year 3500 up to the year 3599 inclusive. p)

						1				1	
Aur.num.	5	6	7	8	9	0	11	12	13	4	15
Epactæ	v	xvii	xxviii	i	x	i	xii	xxiii	iiii	x	xxvi
	i			x	x					v	

Aur.num.	16	17	18	19	1	2	3	4
Epactæ	vii	xviii	xxix	x	xxii	iii	xiii	xxv

3519	3538	3557	3576	3595	3719	3738	3757	3776	3795

XVIII. Ab anno 3600. vsque ad annum 3699. inclusiue. q (XVIII. From the year 3600 up to the year 3699 inclusive. q)

	1			1					1		
Aur. num.	0	11	12	3	14	15	16	17	18	9	1
Epactæ.	ii	xiii	xxiiii	v	xvi	xxvii	viii	xix	*	x	xxiii
										i	

Aur.num.	2	3	4	5	6	7	8	9
Epactæ	iiii	xv	xxvi	vii	xviii	xxix	x	xxi

3619	3638	3657	3676	3695

XIX. Ab anno 3700. vsque ad annum 3799. inclusiue. p (XIX. From the year 3700 up to the year 3799 inclusive. p)

				1							
Aur. num.	15	16	17	18	9	1	2	3	4	5	6
Epactæ.	xxvi	vii	xviii	xxix	x	xxii	iii	xiiii	xx	v	xvii
									v	i	

Aur.num.	7	8	9	10	11	12	13	14
Epactæ	xxviii	ix	xx	i	xii	xxiii	iiii	xv

3719	3738	3757	3776	3795

XX. Ab anno 3800. vsque ad annum 4099. inclusiue. n (XX. From the year 3800 up to the year 4099 inclusive. n)

										1	
Aur. num.	1	2	3	4	5	6	7	8	9	10	1
Epactæ	xxi	ii	xiii	xxiiii	v	xvi	xxvii	viii	xix	*	x
											i

Aur.num.	12	13	14	15	16	17	18	19
Epactæ	xxii	iii	xiiii	25	vi	xvii	xxviii	ix

3819	3838	3857	3876	3895	3914	3933	3952	3971	3990	4009	4028
4047	4066	4085									

XXI. Ab anno 4100. vsque ad annum 4199. m (XXI. From the year 4100 up to the year 4199. m)

	1											
Aur.num.	6	17	18	19	1	2	3	4	5	6	7	
Epactæ	v	xvi	xxvii	viii	x	i	xii	xxiii	iiii	x	xxvi	
					x					v		
Aur.num.	8		9	10	11	12	13	14	15			
Epactæ	vii		xviii	xxix	x	xxi	ii	xiii	xxiiii			
4119	4138		4157	4176		4195						

XXII. Ab anno 4200. vsque ad annum 4499. inclusiue. l (XXII. From the year 4200 up to the year 4499 inclusive. l)

											1	1
Aur. num.	2	3	4	5	6	7	8	9	10		1	2
Epactæ.	*	x	xxii	iii	xiiii	xx	v	xvii	xxviii		i	x
		i				v	i				x	x
Aur.num.		13	14	15		16		17	18		19	1
Epactæ		i	xii	xxiii		iiii		xv	xxvi		vii	xix
4219	4238	4257	4276	4295	4314	4333	4352	4371	4390	4490	4428	
4447	4466	4485										

General parsing notes for the three pages.

- The stub heads alternate in the source between Aur. num., Aur.num., and Aur. Num., and between Epactæ. (with point) and Epactæ (without). Reproduced as printed rather than normalized.

- The terminal-minim convention changes at the page turn: printed p. 162 sets the epacts with a terminal j (iiiij, xxvj, xxiiij), while printed pp. 163–164 set the same values with terminal i (iiii, xxvi, xxi). This is a genuine change of sorts across the forme, not a reading artefact, and is preserved.
- Two epacts are set in Arabic digits inside otherwise Roman rows — 25 at golden number 12 in table XV and 25 at golden number 15 in table XX. Both are unmistakably Arabic on the page and are kept distinct from the Roman xxv that appears elsewhere (tables XIV, XVII, XIX, XXII).
- Every epact-30 cell on these three pages is set with the asterisk sort * (tables XII, XIII, XV, XVI, XVIII, XX, XXII); the small circular © sort does not occur here.
- The index letter attached to each table title is set in small type at the right margin: A, u, t, r, q, p, q, p, n, m, l. The letter at table XIV is a long r, not an f — it falls between t (XIII) and r (XV) in the descending series, and the crossbar does not cross the stem.
- The table numerals are set with internal spacing on printed p. 162 (x i., x i i., x i i i., x i v.) and solid on pp. 163–164 (xv. ... xxii.); transcribed as set.

XXIII. Ab anno 4500. vsque ad annum 4699. inclusiue. k (XXIII. From the year 4500 up to the year 4699 inclusive. k)

		1	1								
Aur. num.	17	8	9	1	2	3	4	5	6	7	8
Epactæ.	xiii	2	v	xviii	xxix	x	xxi	ii	xiii	xxiiii	v
		5	i								
Aur. num.	9	10		11	12	13	14	15		16	
Epactæ.	xvi	xxvii		viii	xix	*	xi	xxii		iii	
4519	4538	4557	4576	4595	4614	4633	4652	4671	4690		

XXIII. Ab anno 4700. vsque ad annum 4999. inclusiue. i (XXIII. From the year 4700 up to the year 4999 inclusive. i)

							1		1		
Aur.num.	8	9	10	11	12	13	4	15	6	17	18
Epactæ	iiii	x	xxvi	vii	xviii	xxix	x	xxi	ii	xiii	xxiii
		v									

Aur.num.	19	1		2		3	4	5	6	7	
Epactæ	v	xvii		xxviii		ix	xx	i	xii	xxiii	

4719	4738	4757	4776	4795	4814	4833	4852	4871	4890	4909	4928
4947	4966	4985									

XXV. Ab anno 5000. vsque ad annum 5099. h (XXV. From the year 5000 up to the year 5099. h)

								1			1
Aur.num.	4	5	6	7	8	9	10	1	12	13	4
Epactæ	xix	*	x	xxii	iii	xiii	xx	v	xvii	xxviii	i
			i				v	i			x

Aur.num.	15	16	17	18	19	1	2	3			
Epactæ	xx	i	xii	xxiii	iiii	xvi	xxvii	viii			

5019	5038	5057	5076	5095							

12 Once the epact of any given year has been found, the following year's epact is formed without difficulty: add 11 to it, and if the sum exceeds 30, cast out 30; or if the sum is exactly 30, take the sign * for the epact. The reason is this. As we showed in chapter 8, Num. 4, the solar year exceeds the lunar year by 11 days, so the new moons in any given year will fall 11 days earlier than in the year before. Accordingly 11 must be added to the preceding year's epact to make up the following year's epact, which is to precede it in the Calendar by exactly 11 days. Only in the case of the year whose golden number is 19 must 12 be added, not 11, to produce the epact of the following year, whose golden number is 1; the reason for this we shall explain shortly. One point, however, must be observed (it was also stated above at chapter 10, Num. 5): whenever the epact so compounded

comes out as xxv, and the golden number of the year in which that epact is in use is greater than 11, then the epact to be taken is that 25 which is marked with a different colour or a different character from the rest.

[Margin: How the epact of any given year is formed from the epact of the preceding year.]

13 Why the following year's epact must be formed by adding 12 rather than 11 to the epact of the year whose golden number is 19, the reason is this. Out of those 209 days that accumulate in 19 solar years from the 11 days by which each solar year exceeds each lunar year, seven embolismic lunations are constituted — six of 30 days and one of 29, as we said in chapter 8, Num. 5. Therefore 30 ought not always to be cast out from the sum produced by adding 11 to the preceding epact when that sum is greater than 30 — that is, whenever the lunar year in question is embolismic and contains 13 lunations, as will be understood from chapter 17. In the seventh and last embolism, whose lunation comprises only 29 days, only 29 ought to be taken away. Since, then, the customary rule always casts out 30, so that all the embolisms may be alike, it is necessary after the last embolism to add 12 to the epact in order to make up the following year's epact — that is, so that the unit taken from the preceding epact is restored to the following one. For if only 29 had been subtracted from the earlier epact, as would have been proper, it would be enough to add 11 in gathering the following year's epact, just as is done in the other cases. In that way there would be produced numerically the same epact that was in use 19 years earlier, and the new moons would return to the same days, as the scheme of the nineteen-year cycle requires — which is precisely what happens when 12 is added to the last epact once 30 has been cast out in the last embolism. And although before the correction of the Calendar the year whose golden number is 19 was not the seventh or last embolismic year but the last but one, that is the sixth (as we shall show in chapter 17), still, because that year was always embolismic, and because 19 is the greatest and the last of all the golden numbers, the computists preferred to make the addition of the number 12 at the point where golden number 19 is used. No appreciable error in the lunations can arise from this. For the same reason we too wished that addition to be made whenever the golden number is 19, whatever epact then corresponds to it, so as to follow the tracks of the ancients as far as that could be done — even though that year is neither always the last embolismic year nor indeed always embolismic at all. But all this will be grasped more plainly and openly in chapter 17.

[Margin: Why 12 is added to the epact concurrent with golden number 19, to produce the following year's epact.]

14 From this the reason is clear why, when golden number 19 is in use, a unit is added to the days that remain after the last lunation of December in order to form the following year's epact, as was stated at the end of chapter 10, Num. 14. It is because 12 must be joined to the epact running with golden number 19, whereas to the other epacts only 11 is added to produce the following year's epact, as we have just shown. If the unit were not then added, those surplus days would yield an epact one unit too small — namely the one that would result from adding 11 to the preceding epact, as happens in the other cases, and not the one that is generated by adding 12; which is absurd. Two epacts, however, are excepted: xviii and xix. If these are in use together with golden number 19, no unit is to be added to those surplus days; the surplus days by themselves give the following year's epact. For in that case one day is taken from the December lunations of these two epacts, so that they run to only 29 days, whereas otherwise they always comprise 30. The result is that the lunation of each of these two epacts ends in December one day earlier than it should, and so that day is left over at the end of December, which otherwise would have had to be added to the other surplus days. Why, with golden number 19 running together with those two epacts, their lunations in the month of December contain only 29 days, we shall explain in chapter 17, where the embolisms are treated.

[Margin: Why, when golden number 19 is current, a unit must be added to the days that remain in December after the last lunation, in order to establish the following year's epact.]

Nor should this be passed over: when in the expanded table one descends from an upper line to a lower one, only 10 is to be added to the epact to form the next epact — unless the golden number happens to be 19, for then 11 is added. But when one must ascend from a lower line to an upper one, 12 must be added, even if the golden number is not 19; indeed, if the golden number were 19, 13 would have to be added in that ascent. All of this is evident in the expanded table. That it must be done in this way is required by the equation of the Moon [*aequatio Lunae*]. Outside this case the rule handed down in Num. 12 is to be kept.

[Margin: Why the following epact is not always formed by adding 11 or 12.]

15 Now suppose that, after some centuries have passed, astronomers should find a magnitude of the year different from the one we now follow, so that the Alphonsine year is no longer midway between the greatest and the least; and

suppose that in consequence the omission of three intercalary days in any span of 400 years should force the vernal equinox to retreat further from 21 March than it can return of itself. Then the equinox will have to be restored to 21 March by intercalating, or by omitting, out of the ordinary course, as many days in some one year as the number of days by which it has departed from the 21st toward the end of the month or toward its beginning, as we taught in chapter 5, Num. 14. Once the equinox has been restored in this way, our equation of the solar year — which orders three intercalary days to be omitted in every span of 400 years — must be taken up again, or another more suitable one instituted to match the newly found magnitude of the solar year. Next, the table of the equation must be renewed as follows. If, in order to bring the equinox back to 21 March, some days have been intercalated, then in the expanded table one must ascend from the line of epacts that was in use before the intercalation through as many lines as there were intercalary days inserted, so that the line brought into use is the one whose epacts are greater by as many units than the epacts of the other line (the one used before that extraordinary intercalation) as there were days intercalated. This is because the new moons will occur just so many days earlier than before, on account of those extra days added to the year out of the ordinary course. If, on the other hand, in order to restore the equinox to 21 March some days have been taken out of the year, then one must descend in the expanded table from the line of epacts then in use through as many lines as there were days removed from the year, so that the line adopted for finding the new moons is the one containing epacts smaller by as many units than the epacts of the other line (the one in use before this removal of days) as there were days removed. This is because the new moons will occur just so many days later than before, on account of those days subtracted from the year out of the ordinary course. Afterwards, the letter attached to that line of epacts up to which the ascent or descent was made must be prefixed in the equation table to the year in which that extraordinary intercalation or removal of days took place. Finally, beyond that year the equation table must be continued according to the precepts handed down in chapter 11 and in Num. 10 of this chapter, beginning from the hundredth year that is nearest to the year in which the equinox was restored, if that year is not itself a hundredth. Thus: when the solar year needs an equation but the lunar does not, the descent is made in the expanded table to the next line below; when the lunar year requires an equation but the solar does not, one ascends to the next line above; and when finally neither year, or both alike, must be equated, one stays on the same line of epacts — as was said above in chapter 11, Num. 9, in that threefold rule. The correction we prescribed in Num. 10 of this chapter is, however, always to be applied.

[Margin: By what method the table of the equation of the epacts is to be renewed, should another magnitude of the year be found by later ages.]

16 But if some defect should be detected in the equation of the Moon — such that the Moon does not anticipate its seats in the Calendar by one day in $312\frac{1}{2}$ years, but in fewer or in more; or if the equation table should fail to exhibit the epacts correctly after some thousands of years — then the scheme of the Moon's equation in the table can easily be altered, by carefully observing when the years omitted in the hundredths make up a sum of 100 or 200 or 300 and so on, so that the equation of the Moon may then be deferred to the next hundredth.

[Margin: By what method the equation table is to be renewed, should the Moon have to be equated otherwise.]

17 But although after the lapse of some centuries the equation table will necessarily have to be corrected in the way we have described, by expert astronomers on the authority of the Roman Pontiff, no change on that account will have to be made in the Calendar itself: the arrangement of the epacts that we described above in chapter 10 will remain wholly intact and unimpaired. For since the epacts are so distributed over the days of the year that no day is left empty, the result is that whether the new moons descend in the Calendar or ascend, other epacts — always corresponding to the same golden numbers — can be taken up for finding them, just as the equation table shall direct, without any change of the epacts in the Calendar. This is something that can fit neither the golden number nor any other cycle which, when set out in the Calendar, does not fill all its places. For if the new moons must, on account of the equation, ascend or descend to those places in the Calendar that are empty and destitute of the cycle's numbers, we shall necessarily be without the numbers that indicate the new moons, unless the cycle is arranged differently — namely so that the number that then indicates the new moons falls into those empty places to which the new moons have slipped. On that reckoning 30 Calendars would have to be constructed, as many, that is, as the number of days by which the new moons can ascend and descend; and of those 30 we shall treat in chapter 15. Now someone may say that there is no need for the cycle to be set out differently in the Calendar, and that it is enough for the number nearest to those empty places to be taken for tracking the new moons; for no appreciable error can be committed thereby, since the cycle cannot show the new moons exactly and precisely, in whatever manner it is placed in the Calendar, but must sometimes indicate them earlier or later. But if anyone says this, who does not see that on such a reckoning

the new moons cannot ascend or descend by as many days as the equation table prescribes for them?

[Margin: Not to change the place of the epacts in the Calendar, even if the equation table must be renewed.]

And who does not notice that a different number of the cycle would then indicate the new moons from the one that the usual rule for finding the golden number — or the number of any other cycle — yields, and that consequently, at every point where the seats of the new moons change, fresh canons would have to be composed for finding that number? I pass over the fact that, since two numbers are always nearest to the empty places in the Calendar, one below and one above, we should be perpetually in doubt which of the two ought to be taken for indicating the new moons. How much disturbance this would bring both to ecclesiastical and to civil affairs, everyone sees.

[Margin: Why the golden number, or any other cycle that does not fill all the places of the Calendar, cannot be unchangeable in the Calendar.]

18 It is on account of this stability of the cycle of epacts in the Calendar alone — namely that nothing in it need be altered even if a different magnitude of the year, or a different period of the Moon, should be discovered by later ages, and the equation table should in consequence have to be changed — that we have called this Gregorian Calendar perpetual and everlasting, and never liable to any change. And rightly so, since in it the cycle of epacts fills every place, and, being keyed to the customary golden number, adapts itself to any magnitude of the solar and indeed of the lunar year, provided the equation table is properly constructed, as we have just explained. Nor did it ever enter the mind of any of us who were summoned by the Supreme Pontiff to this task of the Correction — as certain people wrongly impute to us, men who seek every opportunity to attack the Gregorian Calendar with slanders — that we thought the Calendar should be called perpetual because of the restoration of the equinox and the equation of the solar year prescribed in it. For since it has been observed by the more skilled astronomers that the year is now longer, now shorter, and since its magnitude has not yet been established with certainty (as the great variety of astronomical tables bears witness), who would be so shameless and rash as to dare to affirm and accept that the equinox will remain forever in the seat to which it has been recalled, even if the equation of the solar year is set up with every precaution? And that we did not assert this is most amply attested by that little book of the *Compendium* on restoring the Calendar which was sent to the Christian princes, and which we placed at the beginning of this work: in it a twofold method of

equating the solar year was proposed, one from the Alphonsine year, the other from the Copernican. We should certainly never have done that if we had judged our own equation, which was framed according to the opinion of the Alphonsines, to be so certain that it could never be liable to any change. The same thing is attested most plainly by these words, almost the last of that same *Compendium*: *The vernal equinox having thus been restored to the place from which it had fallen, and this cycle of epacts — which can be adapted to any magnitude of the year — having been set alongside the Calendar, and the scheme of intercalation we have described together with the equation of that cycle having been applied, the years and months will hereafter so agree with the courses of the Sun and Moon that no discrepancy or disagreement can thereafter arise; and if at any time it should, by this very same route they can be most excellently restored to their proper state. But if to anyone the Alphonsine calculations should seem too uncertain to be trusted, and he should think it better to adhere to more recent ones, he will assuredly understand that the arrangement and ordering of this ingenious cycle and of the table of epacts devised by Lilius is such that the calculation of Copernicus, or of any other whatever, can be fitted to it without difficulty, provided that a little equation table drawn up from that calculation is substituted for the one we have written in the margin.* See how clearly and openly we profess that our equation of the solar year is not so firm and settled that we believe it can never stand in need of restoration.

[Margin: Why the Gregorian Calendar is called perpetual.]

[Margin: On what ground the cycle of epacts of the new Calendar is said to be adaptable to any magnitude of the year.]

[Margin: The new Calendar is not called perpetual because we suppose that, by our equation, the equinox cannot depart from 21 March.]

[Margin: Why a twofold method of equating the solar year was proposed in the *Compendium* sent to the princes.]

19 And indeed, as far as the equinox is concerned, it can easily be recalled to its former seat, should it ever desert it, by the omission or the intercalation of a few days, by edict of the Supreme Pontiff — as was done in this very correction of the year by the removal of ten days.

[Margin: How easy the restoration of the equinox is, by the omission or intercalation of a few days.]

20 But to arrange in the Calendar a cycle for showing the new moons that could be adapted to every magnitude of the year, and be perpetual in such a way that nothing in its disposition in the Calendar ever had to be altered — this always seemed to the ancient Fathers and to astronomers extremely difficult, not to say impossible. The reason is that, since the Sun requires fewer days than the Moon in order to anticipate its seat in the Calendar by a whole day, it did not seem possible that over a long period one and the same cycle, whatever it might be, once inscribed in the Calendar, should show the new moons. For when one day is taken out of the year for the equation of the Sun, the new moons must descend by a day in the Calendar, if the Moon does not yet need an equation at that time, as we said above. Unless, then, the cycle is at that point arranged differently in the Calendar, it will be in no way possible for the same number of the cycle as before to indicate the new moons. By the same reasoning, when the Moon requires an equation but the Sun does not, the new moons will necessarily ascend by a day in the Calendar. And so neither then will the same number of the cycle as before correctly show the new moons, unless it is moved upward into the places to which the new moons have advanced. And if in such a case and at such a time anyone were to judge that the new moons should be kept on the same days, he would drive the equinox out of its proper seat and force it to slip toward the end of the month. Thus, if a man applies an equation to the solar year, he will inflict no small loss upon the new moons; while if he sets about equating the lunar year, he will necessarily throw the equinox out of its proper seat — so that what is commonly said fits him exactly:

Incidit in Scyllam cupiens vitare Charybdis. (He falls into Scylla in wishing to avoid Charybdis.)

[Margin: Why it always seemed difficult to inscribe in the Calendar a cycle that should be perpetual.]

But if the equinox and the new moons were to move forward by one day toward the beginnings of the months in the Calendar within the same span of time, this whole difficulty would be entirely removed. Since matters stand as they do, it must be reckoned no small achievement of the correction of the Calendar that the discordant motions of the Sun and Moon have been brought to such concord that the equation of the one does not obstruct the equation of the other, whatever that may be. Hence the Calendar may not undeservedly be called perpetual, even though the equinox, over and above the prescribed equation, occasionally needs some other remedy to keep it from straying too far from 21 March. The greatest thanks and praise, therefore, are due to Aloysius Lilius [Luigi Lilio], who devised

so ingenious a cycle of epacts — one which, inscribed in the Calendar, shows the new moons perpetually, and can be adapted so easily to any magnitude of the year, provided the due equation is applied at its proper times.

[Margin: In praise of the new Calendar.]

The equation table can be corrected in the following way, should an error be detected in it after very distantly separated centuries. For a proposed hundredth year, let the paschal new moon be computed — or rather the full moon, since more account is to be taken of the latter than of the former. Then let it be observed which epact in March or April offers a Moon of *xiiii* days that precedes that full moon by no more than one day. For that is the epact to be taken up with the golden number of that hundredth year; and accordingly there must be prefixed to that hundredth year the letter of the expanded table, opposite which the golden

[Margin: How the equation table is to be corrected in very distantly separated centuries.]

the epact taken up corresponds to the given golden number. For example: in the year 109500, whose golden number is 4, the paschal new moon falls on 18 March, at about hour 11 after noon, while the full moon falls on 2 April, at about hour 5 after noon. The Moon of *xiiii* must therefore fall on 2 April — the day that epact *xi*, written against 20 March, exhibits. That epact must accordingly correspond at that time to golden number 4; and this is indeed what happens in the expanded table, on the line prefixed by the letter P, capital. This letter, then, must be prefixed to the year 109500 in the equation table, and you will also find that same letter by what we set out in this chapter 12, Num. 10.

Next, in the nearest following hundredth year that is not bissextile, if the Moon needs no equation, the letter N, capital, is to be taken up; but if the Moon does require an equation, the same letter P is to be retained. The same must also be done when the following hundredth year is bissextile and the Moon is not to be equated. For if the Moon were to be equated, the letter a, small, would have to be taken up, and so on. This is not a difficult matter, provided that threefold rule given in chapter 11, Num. 9, is carefully weighed. In that hundredth year, therefore, the letter h, small — the one the equation table of chapter 11 offers — is not to be used.

CAPVT XIII.

De Calculo Nouiluniorum, & Pleniluniorum mediorū per Epactas veras.

On the calculation of mean new moons and full moons by means of the true epacts.

Since our cycle of epacts will often have to be examined — to see whether it exhibits the legitimate paschal xiiii, whether it is correctly laid out in the Calendar and correctly equated in the expanded table of the preceding chapter, and finally since other men's cycles will repeatedly have to be compared with ours — I think it worth the effort to set out here a simple and easy method by which anyone can investigate the mean new moons and full moons through the true epacts without great labour. This method, although it is not as accurate as the one drawn from the tables of mean motions, is nevertheless found to depart very little from it. It is given in the Prutenic Tables [tabulae Prutenicae], in the Gregorian Tables of Giuseppe Moletti [Giuseppe Moletti], and also in the tables of Giovanni Antonio Magini [Giovanni Antonio Magini], and it is carefully described by Paul of Middelburg [Paulus de Middelburgo] in his *Paulina* — so that we may safely rely on it in this business of Easter. But a far easier and shorter method of calculating the mean new moons and full moons after the correction you will find in chapters 26 and 27, where first the paschal new moon (or full moon) of any hundredth year is sought, and then, more quickly than can be said, the new moons and full moons of all 100 expanded years after that hundredth year are drawn from the one so found.

[Margin: An easier method of computing the new moons and full moons is given in chap. 25 and 26.]

[Margin: What the epacts of years and of months are.]

Besides the epacts explained so far — which arise from the days by which the solar year exceeds the lunar year, both years being reckoned in whole days and the hours and their fractions neglected — astronomers also consider other, more exact epacts, in which the hours too, and the fractions of hours, are taken into account. These are the days, hours, and minutes of hours which remain over, in any given year (or even month), beyond the whole mean lunations, without completing one whole mean lunation. These are what are called the epacts of years and of months.

[Margin: In what way the epacts of years and of months are gathered and reduced to tables.]

2 THEREFORE, if you subtract the lunar year — that is, 354 days, 8 hours, 48 minutes, 38 seconds, 7 thirds, 36 fourths — from the solar year of 365 days, the remainder gives the epacts of one common year: 10 days, 15 hours, 11 minutes,

21 seconds, 52 thirds, 24 fourths. The epacts of a bissextile year will be 11 days, 15 hours, 11 minutes, 21 seconds, 52 thirds, 24 fourths. From this you will easily make up the epacts of two common years, of three, of four, and so on up to 100, by continually adding the epacts of one common year — always casting out a whole lunation, that is, 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 48 fourths, whenever the sum reached is greater — and adding besides 1 day in bissextile years, such as the years 4, 12, 16, 20 and the rest that four measures out; as you see has been done in the following table of 100 expanded years.

BY THE SAME method you will compose, from the continual addition of the epacts of 100 years, the epacts of 200, 300, 400, 500 and of the following hundredth years, always throwing out a whole lunation whenever this can be done. This is seen in the other table, of years collected by 100 up to 7200. You can nevertheless extend it further, as far as you please, by continually adding 25 days, 4 hours, 30 minutes, 33 seconds, 2 thirds, 16 fourths, and always casting out the whole lunation whenever it can be cast out.

AGAIN, if from the 31 days of January you take away a whole lunation of 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 48 fourths, the remainder gives the epacts of January: 1 day, 11 hours, 15 minutes, 56 seconds, 49 thirds, 12 fourths. If to these you add the days of the following months in order, likewise casting out a whole lunation whenever this can be done, and in a bissextile year assigning 29 days to February, you will make up the epacts of all the months, both of the common year and of the bissextile — just as you see has been done in the double table of the twelve months.

FINALLY, if you begin from the half lunar month of 14 days, 18 hours, 22 minutes, 1 second, 35 thirds, 24 fourths, and proceed by continual addition of the same half month, alternately in each of the two little tables, casting nothing out, until you reach the thirteenth conjunction of 383 days, 21 hours, 32 minutes, 41 seconds, 18 thirds, 24 fourths — that is, the quantity of the embolismic lunar year — then all the tables will have been composed by which both the mean new moons and the mean full moons are readily computed, as we shall shortly explain. These two little tables of Revolutions are what astronomers call Tables of the revolutions of the new moons and full moons.

Now if the calculation is not to be extended beyond the year 6000, it will be enough for the table of revolutions to reach the fourth conjunction, of 118 days, 2 hours, 56 minutes, 12 seconds, 43 thirds, 12 fourths, since the sum to be subtracted from these revolutions can then never be greater than the number of this fourth conjunction. But because in practice it can sometimes happen that

some full moon or new moon after the year 6000 has to be sought — and consequently, as we shall say more than once, that one has to enter the table of years collected by 100 — I have chosen to extend that little table as far as the thirteenth conjunction, because then the sum to be subtracted may be greater than the number of the fourth conjunction. I did this the more deliberately so that the magnitudes of all the lunar months, both of the common year and of the embolismic, might be ready to hand. For thus you see that two lunar months comprise 59 days, 1 hour, 28 minutes, 6 seconds; and that twelve months contain 354 days, 8 hours, 48 minutes, 38 seconds, and so on. Indeed in Num. 4 we shall propose much larger revolutions of the new moons, on account of centuries very far distant, where — because of the very many days omitted which must be added to the calculation, as we shall say in Num. 3 — large revolutions have to be subtracted from the sum of the calculation, as will be said in Num. 3.

Table of the epacts of the expanded years (1–100), with the revolutions of the new moons and full moons

Panel 1

Anni expansi	D	H	M	S
1	10	15	11	22
2	21	6	22	44
3	2	8	50	2
4	14	0	1	24
5	24	15	12	46
6	5	17	40	5
7	16	8	51	27
8	28	0	2	49
9	9	2	30	7
10	19	17	41	29
11	0	20	8	48
12	12	11	20	10
13	23	2	31	32
14	4	4	58	50
15	14	20	10	12
16	26	11	21	34

Anni expansi	D	H	M	S
17	7	13	48	53
18	18	5	0	15
19	28	20	11	37
20	10	22	38	55
21	21	13	50	17
22	2	16	17	36
23	13	7	28	58
24	24	22	40	20
25	6	1	7	38
26	16	16	19	0
27	27	7	30	22
28	9	9	57	41
29	20	1	9	3
30	1	3	36	21
31	11	18	47	43
32	23	9	59	5
33	4	12	26	24
34	15	3	37	46
35	25	18	49	7
36	7	21	16	26
37	18	12	27	48
38	29	3	39	10
39	10	6	6	29
40	21	21	17	51
41	2	23	45	9
42	13	14	56	31
43	24	6	7	53
44	6	8	35	12
45	16	23	46	33

Panel 2

Anni expansi	D	H	M	S
46	27	14	57	55
47	8	17	25	14
48	20	8	36	36
49	1	11	3	55
50	12	2	15	16
51	22	17	26	38
52	4	19	53	57
53	15	11	5	19
54	26	2	16	41
55	7	4	43	59
56	18	19	55	21
57	29	11	6	43
58	10	13	34	2
59	21	4	45	24
60	3	7	12	42
61	13	22	24	4
62	24	13	35	26
63	5	16	2	45
64	17	7	14	7
65	27	22	25	29
66	9	0	52	47
67	19	16	4	9
68	1	18	31	28
69	12	9	42	50
70	23	0	54	12
71	4	3	21	30
72	15	18	32	52
73	26	9	44	14
74	7	12	11	33
75	18	3	22	55
76	0	5	50	13

Anni expansi	D	H	M	S
77	10	21	1	35
78	21	12	12	57
79	2	14	40	16
80	14	5	51	38
81	24	21	3	0
82	5	23	30	18
83	16	14	41	40
84	28	5	53	2
85	9	8	20	21
86	19	23	31	43
87	1	1	59	1
88	12	17	10	23
89	23	8	21	45
90	4	10	49	4

Panel 3 (heading set as Anni Expansi with capital E)

Anni Expansi	D	H	M	S
91	15	2	0	26
92	26	17	11	47
93	7	19	39	6
94	18	10	50	28
95	29	2	1	50
96	11	4	29	9
97	21	19	40	30
98	2	22	7	49
99	13	13	19	11
100	25	4	30	33

Reuolutiones Nouiluniorum [Revolutions of the new moons] — side-label
Coniunctiones [Conjunctions]

D	H	M	S
29	12	44	3

D	H	M	S
59	1	28	6
88	14	12	10
118	2	56	13
147	15	40	16
177	4	24	19
206	17	8	22
236	5	52	25
256	18	36	29
295	7	20	32
324	20	4	35
354	8	48	38
383	21	32	41

Reuolutiones Pleniluniorum [Revolutions of the full moons] — side-label
Oppositiones [Oppositions]

D	H	M	S
14	18	22	2
44	7	6	5
73	19	50	8
103	8	34	11
132	21	18	14
162	10	2	17
191	22	46	21
221	11	30	24
251	0	14	27
280	12	58	30
310	1	42	33
339	14	26	37
369	3	10	40

Table of the epacts of the years collected by 100, and of the months

Panel 1 — Anni per 100. collecti

Anni per 100. collecti	D	H	M	S
100	25	4	30	33
200	20	20	17	3
300	16	12	3	33
400	12	3	50	3
500	7	19	36	32
600	3	11	23	2
700	28	15	53	35
800	24	7	40	5
900	19	23	26	35
1000	15	15	13	5
1100	11	6	59	35
1200	6	22	46	5
1300	2	14	32	35
1400	27	19	3	8
1500	23	10	49	37
1600	19	2	36	7
1700	14	18	22	37
1800	10	10	9	7
1900	6	1	55	37
2000	1	17	42	7
2100	26	22	12	40
2200	22	13	59	10
2300	18	5	45	39
2400	13	21	32	9
2500	9	13	18	39
2600	5	5	5	9
2700	0	20	51	39
2800	26	1	22	12
2900	21	17	8	42
3000	17	8	55	12
3100	13	0	41	41

Anni per 100. collecti	D	H	M	S
3200	8	16	28	11
3300	4	8	14	41
3400	0	0	1	11
3500	25	4	31	44
3600	20	20	18	14

Panel 2 — Anni per 100. collecti

Anni per 100. collecti	D	H	M	S
3700	16	12	4	44
3800	12	3	51	14
3900	7	19	37	44
4000	3	11	24	13
4100	28	15	54	46
4200	24	7	41	16
4300	19	23	27	46
4400	15	15	14	16
4500	11	7	0	46
4600	6	22	47	16
4700	2	14	33	46
4800	27	19	4	19
4900	23	10	50	48
5000	19	2	37	18
5100	14	18	23	48
5200	10	10	10	18
5300	6	1	56	48
5400	1	17	43	18
5500	26	22	13	51
5600	22	14	0	21
5700	18	5	46	51
5800	13	21	33	20
5900	9	13	19	50

Anni per 100. collecti	D	H	M	S
6000	5	5	6	20
6100	0	20	52	50
6200	26	1	23	23
6300	21	17	9	53
6400	17	8	56	23
6500	13	0	42	53
6600	8	16	29	22
6700	4	8	15	52
6800	0	0	2	22
6900	25	4	32	55
7000	20	20	19	25
7100	16	12	5	55
7200	12	3	52	25

Panel 3 — Menses | Epactæ anni communis [Months | Epacts of the common year]

Menses	D	H	M	S
Ian.	1	11	15	57
Feb.	29	11	15	57
Mar.	1	9	47	50
Apr.	1	21	3	47
Mai.	3	8	19	44
Iun.	3	19	35	41
Iul.	5	6	51	38
Aug.	6	18	7	35
Sept.	7	5	23	31
Octob.	8	16	39	28
Nou.	9	3	55	25
Dec.	10	15	11	22

Panel 4 — Menses | Epactæ. Anni Bissextilis. [Months | Epacts of the bissextile year]

Menses	D	H	M	S
Ian.	1	11	15	57
Feb.	0	22	31	54
Mar.	2	9	47	50
Apr.	2	21	3	47
Mai.	4	8	19	44
Iun.	4	19	35	41
Iul.	6	6	51	38
Aug.	7	18	7	35
Sept.	8	5	23	31
Octob.	9	16	39	28
Nou.	10	3	55	25
Dec.	11	15	11	22

Epoche siue radix Christi calculo addenda. [The epoch, or root of Christ, to be added to the calculation.]

D	H	M	S
16	18	12	30

C A P V T X I I I.

(continued)

THESE tables too we have computed ourselves with care — we did not think other men's tables entirely to be trusted, since an error is easily let in when numbers are printed — in days, hours, minutes, seconds, thirds, and fourths. In the tables themselves, however, the thirds and fourths have been set aside, and the reckoning has been carried only as far as seconds; but with this precaution, that whenever in the construction of the tables the thirds in a sum came to more than 30, one second was added to the seconds.

Finally, at the end of all the tables we have placed the epoch of Christ (commonly called the root of Christ), which, on Magini's authority [Giovanni Antonio Magini] and gathered from the Prutenic Tables [*Tabulae Prutenicae*], contains 16 days, 18 hours, 12 minutes, 30 seconds — for it must be added at the end of every calculation.

3 THE USE of these tables for finding the mean new moons and full moons is as follows. [Margin: How new moons and full moons are to be sought from the tables of epacts.] Gather into one sum the epacts of the years collected by 100s that have elapsed; the epacts of the expanded years that have likewise been completed; and finally the epacts of the month preceding the month whose mean new moon or full moon is sought — together with the root of Christ, as is the practice in astronomical tables — always casting out 60, and for each such casting-out adding one unit to the preceding minutes; and likewise casting out 24 from the hours, and for each such casting-out adding one day to the number of days. Then let this sum be cast out of the next larger number of Conjunctions, in its own table, or of Oppositions, in its own table as well, in the tables of revolutions, according as the mean conjunction or the mean opposition is being sought. The remaining number will give the time of the conjunction or opposition sought — provided, however, that after the correction one first adds the days removed on account of the equation of the equinox, up to and including the year proposed. Moreover, in all new moons and full moons found by these tables the hours, with their fractions, are to be counted from noon.

For example. Suppose the new moon of the month of April in the year 1598 is to be investigated; its epact is xxiii. The epacts of the 1500 years are 23 days, 10 hours, 49 minutes, 37 seconds. The epacts of the 97 completed years are 21 days, 19 hours, 40 minutes, 31 seconds. Lastly, the epacts of the completed month of March in a common year are 1 day, 9 hours, 47 minutes, 50 seconds, as the tables above show. All of these, together with the root, 16 d. 18 h. 12 min. 30 sec., make the sum 63 d. 10 h. 30 min. 28 sec. This sum, subtracted from the next larger number of conjunctions — that is, from 88 d. 14 h. 12 min. 10 sec. — leaves 25 d. 3 h. 41 min. 42 sec. If, then, the year had not yet been corrected by the removal of 10 days, the new moon would fall on April 25, 3 h. 41 min. 42 sec. But because in the year 1582 ten days were removed in order to correct the Calendar, 10 days must be added to the new moon found; and once that is done, the same new moon falls on April 35 — that is, on May 5, 3 h. 41 min. 42 sec., as appears in these schemes.

	D	H	M	S
Anni 1500.	23	10	49	37
97.	21	19	40	31
Martius	1	9	47	50
Radix	16	18	12	30
Summa	63	10	30	28

	D	H	M	S.
	88	14	12	10
Deme	63	10	30	28
Apr.	25	3	41	42
	10			
	35	3	41	42

(Stubs as printed: Anni 1500. / 97. / Martius / Radix / Summa in the left panel; Deme and Apr. bracketing the rows of the right panel.)

AND if from this time of 35 days, 3 hours, 41 minutes, 42 seconds of April (that is, from 5 days, 3 hours, 41 minutes, 42 seconds of May, a whole month of April of 30 days having first been added) you subtract the time of one lunation, namely 29 d. 12 h. 44 min. 3 thirds, there will be left the time of the preceding new moon, which will fall in the month of April on day 5, 14 h. 57 min. 39 thirds. And indeed you would have found nearly the same time if for March you had taken the epacts of February, as you see here.

	D	H	M	S
Anni 1500.	23	10	49	37
97	21	19	40	31
Febr.	29	11	15	57
Radix	16	18	12	30
Summa	91	11	58	35

	D	H	M	S
	118	2	56	13
Deme	91	11	58	35
Mart.	26	14	57	38
	10			
	36	14	57	38

IF, however, to that same time of 5 days of May, 3 hours, 41 minutes, 42 seconds you add the time of one lunation, and from the sum cast out the 31 days of the

month of May, you will find that the following new moon occurs in the month of June on day 3, 16 h. 25 min. 45 thirds.

BUT if from the time of any new moon you subtract half a lunar month (adding first the days of the preceding month, if the subtraction cannot otherwise be made), or if you add the same half-month, you will find the time of the mean full moon preceding or following. Thus from the new moon that occurs in the year 1598 on April 5, 14 h. 57 min. 38 sec., you will find the preceding full moon on March 21, 20 h. 35 min. 36 sec. And in this way the days of the month proposed are always to be taken away, if the sum collected exceeds the days of that month. Likewise the days of the preceding month are always to be added when the subtraction cannot be made.

AGAIN, suppose the mean Paschal full moon is to be found in March or April of the year 2673, whose epact is xix. I say "in March or April" because it is not yet settled in which month the Paschal full moon will fall. With the 2600 years take the epacts 5 d. 5 min. 9 sec.; and with the 72 completed years the epacts 15 d. 18 h. 32 min. 52 sec.; and with February of the current common year elapsed the epacts 29 d. 11 h. 15 min. 57 sec. The sum of these, with the root 16 d. 18 h. 12 min. 30 sec., comes to 67 d. 5 h. 6 min. 28 sec. Subtracted from the next larger number of oppositions, namely from 73 d. 19 h. 50 min. 8 sec., there remain 6 d. 14 h. 43 min. 40 sec. And adding the 18 days

that will have been removed up to that time, the mean opposition will occur in the month of March on day 24, 14 h. 43 min. 40 sec.; and this is the Paschal one, since it follows March 21, the day assigned to the equinox.

IF in place of February you had taken, with March, the epacts of a common year, 1 d. 9 h. min. 47 min. 47 sec. 50 [recte: 1 d. 9 h. 47 min. 50 sec. — the printed line repeats min. 47. by dittography], you would have produced the sum 39 d. 3 h. 38 min. 21 sec. Subtracted from 44 d. 7 h. 6 min. 5 sec. (which is the next larger number of oppositions), this leaves 5 d. 3 h. 27 min. 44 sec.; and with the addition of the 18 days which will then have been removed from the year, the full moon will occur in the month of April on 23 d. 3 h. 27 min. 44 sec. This is not the Paschal one, since it comes after April 19, with which the mean Paschal full moons close. Take away from it, therefore (after first adding the 31 days of the preceding month of March), a whole lunation, and you will find that the Paschal full moon occurs in the month of March on day 24, 14 h. 43 min. 41 sec. — practically as before.

MOREOVER, suppose the mean Paschal full moon is sought in March or April of the bissextile year 1600, whose epact is xv. With the 1500 collected and completed years take the epacts 23 d. 10 h. 49 min. 37 sec.; with the 99 expanded years that have elapsed, the epacts 13 d. 13 h. 19 min. 11 sec.; and with February of the bissextile year elapsed, the epacts 0 d. 22 h. 31 min. 54 sec. All of these, together with the root 16 d. 18 h. 12 min. 30 sec., make up 54 d. 16 h. 53 min. 12 sec. This sum being subtracted from the next larger number of oppositions, that is from 73 d. 19 h. 50 min. 8 sec., and the ten days removed from the year being added to the remainder, the Paschal full moon will occur in the month of March on 29 d. 2 h. 56 min. 56 sec.

LET IT ALSO be proposed to find the new moon in the month of January of the year 1700, whose epact is ix. With the 1600 collected years elapsed, take the epacts 19 d. 2 h. 36 min. 7 sec.; and with the 99 expanded years elapsed, the epacts 13 d. 13 h. 19 min. 11 sec. These, with the root 16 d. 18 h. 12 min. 30 sec. (since no month has elapsed before January), make the sum 49 d. 10 h. 7 min. 48 sec. Subtract this from the next larger number of conjunctions, namely from 59 d. 1 h. 28 min. 6 sec., and add to the remainder the 11 days then removed, and the new moon will be found in January on day 20, 15 h. 20 min. 18 sec.

SUPPOSE, again, someone wants the Paschal full moon in March or April of the year 325, whose epact is * [the asterisk sort = epact 30]. With the 300 completed years let the epacts 16 d. 12 h. 3 min. 33 sec. be taken among the collected years; with the 24 expanded years elapsed, the epacts 24 d. 22 h. 40 min. 20 sec.; and likewise, February being past, the epacts 29 d. 11 h. 15 min. 57 sec. The sum of these, with the root 16 d. 18 h. 12 min. 30 sec., embraces 87 d. 16 h. 12 min. 20 sec. Taken from the next larger number of oppositions, 103 d. 8 h. 34 min. 11 sec., it leaves as the time of the mean full moon in March 15 d. 16 h. 21 min. 51 sec.; and this is not the Paschal one. A whole lunation being therefore added, the Paschal full moon will be found in the month of March on day 45, 5 h. 5 min. 54 sec. — that is, April 14, 5 h. 5 min. 54 sec.

IF for February you had taken the epacts of March in a common year, you would at once have found the full moon of April at 14 d. 5 h. 5 min. 55 sec., practically as before.

LASTLY, suppose the new moon is to be investigated in the month of January of the year iiii, whose golden number is 16 and epact iiii. Since the collected years exceed the year 7200, we shall first take the epacts of 7000 collected years, 20 d. 20 h. 19 min. 25 sec.; then the epacts of the remaining 4100 collected years, 28 d. 15 h. 54 min. 46 sec.; and the epacts of the 10 expanded years elapsed, 19 d. 17 h.

41 min. 29 sec. (No entry is made for the months, since no month preceded January.) The sum of all these with the root, 16 d. 18 h. 12 min. 30 sec., is 86 d. 0 h. 8 min. 10 sec., and we shall subtract it from the next larger number of conjunctions, 88 d. 14 h. 12 min. 10 sec. To the remainder, 2 days 14 h. 4 min. 0 sec., we shall add the 82 days removed. (How the number of days suppressed up to and including a given centesimal year after the year 1600 is to be found, we showed in Chapter 12, at the beginning of Num. 9; and if to it one adds the 10 days removed in the year 1582, the whole number of days subtracted will be made up.) We shall then find that the new moon of January falls on 84 d. 14 h. 4 min. 0 sec. — that is, the 31 days of January and the 28 of February being taken away, on March 25, 14 h. 4 min. 0 sec. [Margin: What is to be done when the new moon or full moon sought falls beyond the month proposed.] But if from 84 d. 14 h. 4 min. 0 sec. we subtract the largest number of conjunctions — not of full moons — that can be subtracted (which must always be done when the new moon or full moon sought falls beyond the month proposed), namely the time of two lunations, that is 59 d. 1 h. 28 min. 6 sec., there will be left the new moon of January sought, 25 d. 12 h. 35 min. 54 sec.

IF for the 10 expanded years we take the epacts of 9 years, namely 9 d. 2 h. 30 min. 7 sec., and likewise the epacts of October in a common year, 8 d. 16 h. 39 min. 28 sec. — so that, once the 82 days then removed from the year are added, the new moon may fall in January — the sum produced will be 84 d. 1 h. 36 min. 16 sec. Subtracting this from the next larger number of conjunctions, namely from 88 d. 14 h. 12 min. 10 sec., we shall find that the new moon of November in the year *iiii*^o [so printed: four minims with a small superior *o*; see anomaly (c)] falls on November 4, 12 h. 35 min. 54 sec.; and with the 82 days subtracted from the year added, on November 86, 12 h. 35 min. 54 sec. — that is, taking away the 61 days that November and December contain, on January 25, 12 h. 35 min. 34 sec. of the following year *iiii*, as before.

4 FOR THE REST, if you ask why all the days removed or omitted are to be added to the calculation, when nevertheless the descent through the table of expanded epacts has not always been made through as many lines — as is plain from the table of the equation — know that the reason is this. [Margin: Why all the days removed on account of the equation of the equinox must be added to the calculation of the lunations.] Astronomical calculation exhibits the lunations as they truly occur in the heavens, on the supposition that no day has been removed from the year, and with no account taken of the equation of the Moon; for the calculation of itself equates the Moon, and the equation of the Moon is employed in the Calendar solely to correct the nineteen-year cycle. Hence, if up to the time

at which the calculation of some lunation is begun a number of days have been removed on account of the equation of the equinox, that lunation will occur so many days later — inasmuch as in the calculation those same days were reckoned in as though they had not been taken away. Necessarily, therefore, all the removed days must be added, so that the lunations may be indicated so many days later and may fall on their proper days.

SINCE, however, when the year proposed is so large that a great many removed days have to be added to the new moon or full moon found — and consequently a great many revolutions of the new moons have also to be subtracted, so that the new moon or full moon of the month proposed may be left over — we have computed the following revolutions, which are multiples of the last entry of the table above, 383 days, 21 hours, 32 minutes, 41 seconds, 20 thirds, 24 fourths, so that from them one may always take the largest that can be subtracted, and need not subtract those set out in the table above repeatedly and not without trouble. We have disregarded the thirds and fourths, adding however 1 second whenever the thirds are more than 30.

REVOLVTIONESNOVILVNIO RVM.

(Revolutions of the new moons.)

Dies	H	M	S	Dies	H	M	S	Dies	H	M	S
767	1	5	2	307118	3	5	1	191948850	8	2	0
	9		3			1	2			0	
1151	1	3	4	345507	2	2	6	230338620	1	0	0
	6	8			2	0			0		
1535	1	1	4	383897	1	4	0	268728390	1	4	0
	4	0	5		6	9			1	0	
1919	1	4	2	767795	9	3	0	307118160	1	2	0
	1	3	7			8			3	0	
2303	9	1	8	1151693	2	2	0	345507930	1	0	0
		6				7			5		
2687	6	4	4	1535590	1	1	0	383897700	1	4	0
		8	9		9	6			6	0	
3071	4	2	3	1919488	1	5	0	767795401	9	2	0
		1	1		2					0	
3455	1	5	1	2303386	4	5	0	1151693102	2	0	0
		4	2			4					

Dies	H	M	S	Dies	H	M	S	Dies	H	M	S
3838	2	2	5	2687283	2	4	0	1535590802	1	4	0
	3	6	3		1	3			8	0	
7677	2	5	4	3071181	1	3	0	1919488503	1	2	0
	2	3	7		4	2			1	0	
11516	2	2	4	3455079	7	2	0	2303386204	4	0	0
	2	0	0			1					
15355	2	4	3	3838977	0	1	0	2687283904	2	4	0
	1	7	4			0			0	0	
19194	2	1	2	7677954	0	2	0	3071181605	1	2	0
	1	4	7			0			3	0	
23033	2	4	2	11516931	0	3	0	3455079306	6	0	0
	0	1	0			0					
26872	2	8	1	15355908	0	4	0	3838977006	2	4	0
	0		4			0			2	0	
30711	1	3	7	19194885	0	5	0	7677954013	2	2	0
	9	5				0			1	0	
34550	1	2	1	23032862	1	0	0	11516931020	2	0	0
	9								0		
38389	1	2	5	26872839	1	1	0	15355908027	1	4	0
	8	8	4			0			8	0	
76779	1	5	4	30711816	1	2	0	19194885034	1	2	0
	2	7	8			0			7	0	
115169	7	2	4	34550793	1	3	0	23033862041	1	0	0
		6	2			0			6		
153559	1	5	3	38389770	1	4	0	26872839048	1	4	0
		5	6			0			4	0	
191948	2	2	3	76779540	3	2	0	30711816055	1	2	0
	0	4	0			0			3	0	
230338	1	5	2	115169310	5	0	0	34550793062	1	0	0
	4	3	4						2		
268728	9	2	1	153559080	6	4	0	38389770069	1	4	0
		2	8			0			0	0	

5 SOMEONE will perhaps also ask what the reason is that, when the calculation of the lunations is carried out for two years of which one exceeds the other by 19

years, the anticipation of about 1 h. 27 min. 33 sec. is not perceived — the anticipation which we showed in Chapter 8, Num. 4 to be owed to the Moon every 19 years. [Margin: Why in new moons found by computation the anticipation of 1 h. 27 min. 33 sec. is not perceived after 19 years. (*printed aticipatio for anticipatio, and H. I, with a comma*)] To make this more clearly perceived, we have computed the new moons of March for the five years here. In them the said anticipation is in no way to be found. Now this happens because of the common and bissextile years. For in 19 years, over and above 4 bissextiles, there still remain 3 common years; in 38 years, 2 remain; in 57 years, 1 remains; but in 76 years there are contained 4 cycles, and no common year is left over. And since the epacts of common years are 6 hours less than they ought to be, on account of the 6 hours omitted in the Calendar, the result is that the aforesaid anticipation is not preserved. Yet in the two years 1600 and 1676, whose difference is 76 years, the anticipation of about 5 h. 50 min. 11 sec. plainly appears, as the argument requires.

Anni	D	H	M	S
1600	14	8	34	54
1619	15	1	7	21
1638	14	17	39	48
1657	14	10	12	15
1676	14	2	44	40

But if from the new moon of the year 1600 there are taken 18 hours, on account of the 3 common years passed since the bissextile year 1596 (because in the calculation these 18 hours ought to have been taken from the next larger number of conjunctions as well), the new moon of March will fall on day 13, 14 h. 34 min. 54 sec. Indeed, because at the end of the year the first 1 day accrues, we shall say that it falls on day 14, 14 h. 34 min. 54 sec. Likewise, if from the new moon of the year 1619 twelve hours are removed, on account of the two common years elapsed since the bissextile 1616, the new moon of March will fall on day 14, 13 h. 7 min. 21 sec., which occurs earlier than the new moon just named by 1 h. 27 min. 33 sec. Again, if from the new moon of the year 1638 six hours are taken away, because one common year is left over after the bissextile 1636, it will occur in March on day 14, 11 h. 39 min. 48 sec., which likewise differs from the immediately preceding one by 1 h. 27 min. 33 sec. So too, if you subtract the new moon of the year 1657 (from which nothing is to be taken away, since the year 1656 just elapsed is bissextile) from the nearest new moon — that is, from 14 d. 11 h. 39 min. 48 sec. — the remainder will yield the same anticipation of 1 h. 27 min.

33 sec. Furthermore, if from the new moon of the year 1676 you remove 18 hours, on account of the 3 common years elapsed since the bissextile 1672, it will occur in March on day 13, or rather 14 (because at the end of the year one day then first accrues), at 8 h. 44 min. 40 sec.; and this again differs from the preceding by 1 h. 27 min. 35 sec. Finally, if the new moon of the year 1676 is subtracted from the new moon of the year 1600 (for these new moons are to be taken just as they stand, since those two years differ from one another by 76 years, in which are contained exactly 4 nineteen-year cycles and 19 bissextile years), the anticipation of 5 h. 50 min. 14 sec. will appear.

If anyone wishes to compute new moons and full moons for more distant ages, he may use, in place of the table of years collected by 100s, the following table, which extends as far as the year 1000000000.

Table of years collected by powers of ten, with their epacts (continued)

Anni	D	H	M	S
100	25	4	30	33
200	20	20	17	3
300	16	12	3	33
400	12	3	50	3
500	7	19	36	32
600	3	11	23	2
700	28	15	53	35
800	24	7	40	5
900	19	23	26	35
1000	15	15	13	5
2000	1	17	42	7
3000	17	8	55	12
4000	3	11	24	13
5000	19	2	37	18
6000	5	5	6	20
7000	20	20	19	25
8000	6	22	48	27
9000	22	14	1	32

Anni	D	H	M	S
10000	8	16	30	33
20000	17	9	1	7
30000	26	1	31	40
40000	5	5	18	11

Anni	D	H	M	S
50000	13	21	48	44
60000	22	14	19	18
70000	1	18	5	48
80000	10	10	36	21
90000	19	3	6	55
100000	27	19	37	28
200000	26	2	30	54
300000	24	9	24	19
400000	22	16	17	44
500000	20	23	11	9
600000	19	6	4	35
700000	17	12	58	0
800000	15	19	51	25
900000	14	2	44	50
1000000	12	9	38	16
2000000	24	19	16	31
3000000	7	16	10	43
4000000	20	1	48	59
5000000	2	22	43	11
6000000	15	8	21	27
7000000	27	17	59	43
8000000	10	14	53	55

Anni	D	H	M	S
9000000	23	0	32	10
10000000	5	21	26	23
20000000	11	18	52	46
30000000	17	16	19	9
40000000	23	13	45	31
50000000	29	11	11	54
60000000	5	19	54	14
70000000	11	17	20	37
80000000	17	14	47	0
90000000	23	12	13	23
100000000	29	9	39	45
200000000	29	6	35	28
300000000	29	3	31	10
400000000	29	0	26	52
500000000	28	21	22	34
600000000	28	18	18	16
700000000	28	15	13	59
800000000	28	12	9	41
900000000	28	9	5	23
1000000000	28	6	1	5

So if the year 3469000 is proposed, you must enter this table first with 3000000 years, then with 400000, then with 60000 and 8000 elapsed, and finally with 900 and 99 completed, and so on. When, however, the year is no greater than 7200, the earlier table is quicker, since fewer entries have to be made in it.

CAPVT XIII.

On an easier computation of mean new moons and full moons, worked out by means of the mean new moons computed for 76 years.

[Margin: How the table of new moons for the 76 primary years is constructed.]

To make mean new moons and full moons easier to find, we have computed the new moons for 76 years — because exactly 4 cycles and 19 bissextile years are contained in that span — beginning with the year 1501 and running to the year 1576. These 76 years, from 1501 to 1576, we shall call the *primary* years of the table, since all the new moons of this table suit them just as they stand, with nothing added and nothing taken away. In this we have followed Paul of Middelburg [Paulus de Middelburgo], Bishop of Fossombrone, who did the same thing in book 11 of his *Paulina*. In this computation we have for the most part obtained each new moon from the one before it by adding a single whole lunation, although now and then we have also computed the same new moons by the tables of epacts given earlier; for we found either no difference at all between the two calculations, or an odd one. The new moons of January were computed by the tables for every year, while the new moons of the other months were derived from these by continuous addition of a whole lunation. I mention this so that you will not be surprised if, computing new moons for yourself, you occasionally find a difference of one second or two between your new moons and ours — a difference which I have never found to exceed 3 seconds.

[Margin: How the table of ranks is constructed, and of the time which at each rank is to be added to the new moons or subtracted from them.]

In chapter 8, Num. 4 we showed that over 76 years the new moons anticipate their places by 5 h. 50 min. 10 sec. 44 thirds 0 fourths. Accordingly we have drawn up the following table in front of the table of 76 years, by continuous addition of one such anticipation, and on the left we have written the numbers 1, 2, 3, 4, and so on in their natural order, to indicate the ranks [ordines] of each successive set of 76 years. So you see that at rank 10 — that is, after 76 years have run ten times — the anticipation amounts to D. 2, H. 10, Min. 21, sec. 47, thirds 20. This table has been extended as far as rank 130, at which the anticipation in the new moons will have reached 31 days, 14 h., 43 min., 15 sec., 20 thirds. Anyone who wishes may extend it indefinitely by continuing to add 5 h. 50 min. 10 sec. 44 thirds. That, however, is not necessary, and would make the table swell beyond all measure — especially since, for years that call for a rank greater than 130, the new moons are found more easily and more reliably by the epacts, as in chapter 13. In fact it is not worth investigating new moons beyond the year 28400, because at that point the computed new moons will differ from the new moons of the epacts in the Calendar by one whole day, and after the year

30300 by nearly 11 days. The reason is that around the year 28400 the equinox must be restored to the 21st and 22nd, the point to which it will have slipped

because of the two years by which we anticipate the omission of 3 days in 400 years, as we said in chapter 5, Num. 17. But around the year of the Lord 30300 — that is, some 298700 years after the correction, or thereabouts — it will have slipped from the 21st to the 1st of April, because by then nearly 11 days more would have been dropped than the reckoning requires. Furthermore, in all the new moons of the table that follows, the hours together with their fractions are to be counted after midday.

[Margin: How the series of years to the right of the table of new moons runs on.]

The series of years written against the rank-numbers in the table of 76 years is easy as well. For beside any one of those 76 primary years, the first year of the series is made up of that primary year (whose new moons are computed in the table) together with 76; and all the rest are formed from the first by continuous addition of 76. Or, more easily, they may all be written in without this addition, as follows. Beside the first primary year put the year 1577, which is the next above 1576, the last primary year in the table. Then beside the second primary year write 1578, and 1579 beside the third, and so on. In this way the year 1652 will end up written beside the primary year 1576. Begin again, then: set 1653 beside the first primary year, 1654 beside the second, and so on. Or we may certainly do it this way. Once as many years as you please have been written to the right of the primary year 1501, formed by continuous addition of 76, write the same years increased by one beside the second primary year, which is 1502. Then write these again increased by one beside the third primary year, that is, beside the year 1503; and so on in turn.

[Margin: In what manner the series of years to the left of the table of new moons runs on.]

The series of years to the left of the table likewise runs on by continuous subtraction of 76 from the primary years they are set against, until no further subtraction can be made. Or, more easily, we shall write in the same years without this continuous subtraction, as follows. Once nineteen years have been written to the left of the first year, 1501, formed by that continuous subtraction, write the same years increased by one beside the second primary year, that is, beside the year 1502. Then write these again increased by one beside the third, and so on in turn. But when the last number formed beside some primary year turns out to be greater than 76, subtract 76, so that another, smaller year may be formed. For example: since the last year to the left of the primary year 1520 is 76, opposite rank 19, if 1 is added it will make the year 77, which would have to be written beside the year 1521, opposite that same rank 19. So take away 76 years,

and the year 1 remains, to be written opposite rank 20. These years to the left are all smaller than 1501, just as those to the right are all larger. Finally, over the smaller ones is set the title [Adde], and over the larger the title [subtrahe]; the use of these titles will be explained later.

SEQVVNTVR TABVLÆ.

Tabula ordinum, & temporis, quod quolibet ordine addendum est Nouilunijs, vel subtrahendum.

Table of the ranks, and of the time which at each rank is to be added to the new moons or subtracted from them.

Ordines	Dies	Horæ	Min.	Sec.	Tert.
1	0	5	50	10	44
2	0	11	40	21	28
3	0	17	30	32	12
4	0	23	20	42	56
5	1	5	10	53	40
6	1	11	1	4	24
7	1	16	51	15	8
8	1	22	41	25	52
9	2	4	31	36	36
10	2	10	21	47	20
11	2	16	11	58	4
12	2	22	2	8	48
13	3	3	52	19	32
14	3	9	42	30	16
15	3	15	32	41	0
16	3	21	22	51	44
17	4	3	13	2	28
18	4	9	3	13	12
19	4	14	53	23	56
20	4	20	43	34	40
21	5	2	33	45	24

Ordines	Dies	Horæ	Min.	Sec.	Tert.
22	5	8	23	56	8
23	5	14	14	6	52
24	5	20	4	17	36
25	6	1	54	28	20
26	6	7	44	39	4
27	6	13	34	49	48
28	6	19	25	0	32
29	7	1	15	11	16
30	7	7	5	22	0
31	7	12	55	32	44
32	7	18	45	43	28
33	8	0	35	54	12
34	8	6	26	4	56
35	8	12	16	15	40
36	8	18	6	26	24
37	8	23	56	37	8
38	9	5	46	47	52
39	9	11	36	58	36
40	9	17	27	9	20
41	9	23	17	20	4
42	10	5	7	30	48
43	10	10	57	41	32
44	10	16	47	52	16

Ordines	Dies	Horæ	Min.	Sec.	Tert.
45	10	22	38	3	0
46	11	4	28	13	44
47	11	10	18	24	28
48	11	16	8	35	12
49	11	21	58	45	56
50	12	3	48	56	40

Ordines	Dies	Horæ	Min.	Sec.	Tert.
51	12	9	39	7	24
52	12	15	29	18	8
53	12	21	19	28	52
54	13	3	9	39	36
55	13	8	59	50	20
56	13	14	50	1	4
57	13	20	40	11	48
58	14	2	30	22	32
59	14	8	20	33	16
60	14	14	10	44	0
61	14	20	0	54	44
62	15	1	51	5	28
63	15	7	41	16	12
64	15	13	31	26	56
65	15	19	21	37	40
66	16	1	11	48	24
67	16	7	1	59	8
68	16	12	52	9	52
69	16	18	42	20	36
70	17	0	32	31	20
71	17	6	22	42	4
72	17	12	12	52	48
73	17	18	3	3	32
74	17	23	53	14	16
75	18	5	43	25	0
76	18	11	33	35	44
77	18	17	23	46	28
78	18	23	13	57	12
79	19	5	4	7	56
80	19	10	54	18	40
81	19	16	44	29	24

Ordines	Dies	Horæ	Min.	Sec.	Tert.
82	19	22	34	40	8
83	20	4	24	50	52
84	20	10	15	1	36
85	20	16	5	12	20
86	20	21	55	23	4
87	21	3	45	33	48
88	21	9	35	44	32

Ordines	Dies	Horæ	Min.	Sec.	Tert.
89	21	15	25	55	16
90	21	21	16	6	0
91	22	3	6	16	44
92	22	8	56	27	28
93	22	14	46	38	12
94	22	20	36	48	56
95	23	2	26	59	40
96	23	8	17	10	24
97	23	14	7	21	8
98	23	19	57	31	52
99	24	1	47	42	36
100	24	7	37	53	20
101	24	13	28	4	4
102	24	19	18	14	48
103	25	1	8	25	32
104	25	6	58	36	16
105	25	12	48	47	0
106	25	18	38	57	44
107	26	0	29	8	28
108	26	6	19	19	12
109	26	12	9	29	56
110	26	17	59	40	40

Ordines	Dies	Horæ	Min.	Sec.	Tert.
111	26	23	49	51	24
112	27	5	40	2	8
113	27	11	30	12	52
114	27	17	20	23	36
115	27	23	10	34	20
116	28	5	0	45	4
117	28	10	50	55	48
118	28	16	41	6	32
119	28	22	31	17	16
120	29	4	21	28	0
121	29	10	11	38	44
122	29	16	1	49	28
123	29	21	52	0	12
124	30	3	42	10	56
125	30	9	32	21	40
126	30	15	22	32	24
127	30	21	12	43	8
128	31	3	2	53	52
129	31	8	53	4	36
130	31	14	43	15	20

The first of the year-tables for the mean new moons: **Nouilunia media anni 1501.** — Mean new moons of the year 1501; **Aur. Num. 1.** [*Aureus Numerus* — Golden Number 1].

Left-hand block — the years to which time is added. The stub column is headed ORDINES (Ranks), printed turned 90°; the second column Anni Domini (Years of the Lord), likewise turned, with the sub-head Adde (Add) set upright.

ORDINES (Ranks)	Anni Domini — Adde (Add)
1	1425
2	1349
3	1273
4	1197

ORDINES (Ranks)	Anni Domini — Adde (Add)
5	1121
6	1045
7	969
8	893
9	817
10	741
11	665
12	589
13	513
14	437
15	361
16	285
17	209
18	133
19	57
20	[blank]

Set vertically along the foot of the Anni Domini column: **Pro hisce annis fit additio temporis, quod ordinibus respondet.** — "For these years, the amount of time corresponding to the ranks is added."

The mean new moons themselves. Column Menses (Months), turned 90°, gives the month initials; the four narrow columns are headed D (dies, days) | H (horæ, hours) | M (minuta, minutes) | S (secunda, seconds).

Menses (Months)	D	H	M	S
I (January)	18	20	25	59
F (February)	17	9	10	2
M (March)	18	21	54	5
A (April)	17	10	38	8
M (May)	16	23	22	11
I (June)	15	12	6	14
I (July)	15	0	50	17
A (August)	13	13	34	20

Menses (Months)	D	H	M	S
S (September)	12	2	18	23
O (October)	11	15	2	26
N (November)	10	3	46	29
D (December)	9	16	30	32

Beneath the last month, in the same column: **Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.** — "For the years to the right, the amount of time corresponding to the ranks is subtracted."

Right-hand block — the years from which time is subtracted. Three panels across the page, each with the columns *Ordines* (Ranks, turned 90°) and *Anni Subtrahe*. (Years — Subtract).

Ordines	Anni Subtrahe	Ordines	Anni Subtrahe	Ordines	Anni Subtrahe
1	1577	45	4921	89	8265
2	1653	46	4997	90	8341
3	1729	47	5073	91	8417
4	1805	48	5149	92	8493
5	1881	49	5225	93	8569
6	1957	50	5301	94	8645
7	2033	51	5377	95	8721
8	2109	52	5453	96	8797
9	2185	53	5529	97	8873
10	2261	54	5605	98	8949
11	2337	55	5681	99	9025
12	2413	56	5757	100	9101
13	2489	57	5833	101	9177
14	2565	58	5909	102	9253
15	2641	59	5985	103	9329
16	2717	60	6061	104	9405
17	2793	61	6137	105	9481
18	2869	62	6213	106	9557
19	2945	63	6289	107	9633

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
20	3021	64	6365	108	9709
21	3097	65	6441	109	9785
22	3173	66	6517	110	9861
23	3249	67	6593	111	9937
24	3325	68	6669	112	10013
25	3401	69	6745	113	10089
26	3477	70	6821	114	10165
27	3553	71	6897	115	10241
28	3629	72	6973	116	10317
29	3705	73	7049	117	10393
30	3781	74	7125	118	10469
31	3857	75	7201	119	10545
32	3933	76	7277	120	10621
33	4009	77	7353	121	10697
34	4085	78	7429	122	10773
35	4161	79	7505	123	10849
36	4237	80	7581	124	10925
37	4313	81	7657	125	11001
38	4389	82	7733	126	11077
39	4465	83	7809	127	11153
40	4541	84	7885	128	11229
41	4617	85	7961	129	11305
42	4693	86	8037	130	11381
43	4769	87	8113		
44	4845	88	8189		

The second year-table: **Nouilunia media anni 1502.** — Mean new moons of the year 1502; **Aur. Num. 2.** [Golden Number 2].

ORDINES (Ranks)	Anni Domini — Adde (Add)
1	1426
2	1350

ORDINES (Ranks)	Anni Domini — Adde (Add)
3	1274
4	1198
5	1122
6	1046
7	970
8	894
9	818
10	742
11	666
12	590
13	514
14	438
15	362
16	286
17	210
18	134
19	58
20	[blank]

Vertically along the column foot: **Pro hisce annis fit additio temporis, quod ordinibus respondet.** — "For these years, the amount of time corresponding to the ranks is added."

Menses (Months)	D	H	M	S
I (January)	8	5	14	37
F (February)	6	17	58	40
M (March)	8	6	42	43
A (April)	6	19	26	46
M (May)	6	8	10	49
I (June)	4	20	54	52
I (July)	4	9	38	55
A (August)	2	22	22	58
S (September)	1	11	7	1

Menses (Months)	D	H	M	S
S (September)	30	23	51	4
O (October)	30	12	35	7
N (November)	29	1	19	10
D (December)	28	14	3	13

Beneath: **Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.** — "For the years to the right, the amount of time corresponding to the ranks is subtracted."

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
1	1578	45	4922	89	8266
2	1654	46	4998	90	8342
3	1730	47	5074	91	8418
4	1806	48	5150	92	8494
5	1882	49	5226	93	8570
6	1958	50	5302	94	8646
7	2034	51	5378	95	8722
8	2110	52	5454	96	8798
9	2186	53	5530	97	8874
10	2162	54	5606	98	8950
11	2338	55	5682	99	9026
12	2414	56	5758	100	9102
13	2490	57	5834	101	9178
14	2566	58	5910	102	9254
15	2642	59	5986	103	9330
16	2718	60	6062	104	9406
17	2794	61	6138	105	9482
18	2870	62	6214	106	9558
19	2946	63	6290	107	9634
20	3022	64	6366	108	9710
21	3098	65	6442	109	9786
22	3174	66	6518	110	9862

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
23	3250	67	6594	111	9938
24	3326	68	6670	112	10014
25	3402	69	6746	113	10090
26	3478	70	6822	114	10166
27	3554	71	6898	115	10242
28	3630	72	6974	116	10318
29	3706	73	7050	117	10394
30	3782	74	7126	118	10470
31	3858	75	7202	119	10546
32	3934	76	7278	120	10622
33	4010	77	7354	121	10698
34	4086	78	7430	122	10774
35	4162	79	7506	123	10850
36	4238	80	7582	124	10926
37	4314	81	7658	125	11002
38	4390	82	7734	126	11078
39	4466	83	7810	127	11154
40	4542	84	7886	128	11230
41	4618	85	7962	129	11306
42	4694	86	8038	130	11382
43	4770	87	8114		
44	4846	88	8190		

The third year-table: **Nouilunia media anni 1503.** — Mean new moons of the year 1503; **Aur. Num. 3.** [Golden Number 3].

ORDINES (Ranks)	Anni Domini — Adde (Add)
1	1427
2	1351
3	1275
4	1199
5	1123

ORDINES (Ranks)	Anni Domini — Adde (Add)
6	1047
7	971
8	895
9	819
10	743
11	667
12	591
13	515
14	439
15	363
16	287
17	211
18	135
19	59
20	[blank]

Vertically along the column foot: **Pro hisce annis fit additio temporis, quod ordinibus respondet.** — "For these years, the amount of time corresponding to the ranks is added."

Menses (Months)	D	H	M	S
I (January)	27	2	47	19
F (February)	25	15	31	22
M (March)	27	4	15	25
A (April)	25	16	59	28
M (May)	25	5	43	31
I (June)	23	18	27	34
I (July)	23	7	11	37
A (August)	21	19	55	40
S (September)	20	8	39	43
O (October)	19	21	23	46
N (November)	18	10	7	49
D (December)	17	22	51	52

Beneath: **Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.** — "For the years to the right, the amount of time corresponding to the ranks is subtracted."

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
1	1579	45	4923	89	8267
2	1655	46	4999	90	8343
3	1731	47	5075	91	8419
4	1807	48	5151	92	8495
5	1883	49	5227	93	8571
6	1959	50	5303	94	8647
7	2035	51	5379	95	8723
8	2111	52	5455	96	8799
9	2187	53	5531	97	8875
10	2263	54	5607	98	8951
11	2339	55	5683	99	9027
12	2415	56	5759	100	9103
13	2491	57	5835	101	9179
14	2567	58	5911	102	9255
15	2643	59	5987	103	9331
16	2719	60	6063	104	9407
17	2795	61	6139	105	9483
18	2871	62	6215	106	9559
19	2947	63	6291	107	9635
20	3023	64	6367	108	9711
21	3099	65	6443	109	9787
22	3175	66	6519	110	9863
23	3251	67	6595	111	9939
24	3327	68	6671	112	10015
25	3403	69	6747	113	10091
26	3479	70	6823	114	10167
27	3555	71	6899	115	10243

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
28	3631	72	6975	116	10319
29	3707	73	7051	117	10395
30	3783	74	7127	118	10471
31	3859	75	7203	119	10547
32	3935	76	7279	120	10623
33	4011	77	7355	121	10699
34	4087	78	7431	122	10775
35	4163	79	7507	123	10851
36	4239	80	7583	124	10927
37	4315	81	7659	125	11003
38	4391	82	7735	126	11079
39	4467	83	7811	127	11155
40	4543	84	7887	128	11231
41	4619	85	7963	129	11307
42	4695	86	8039	130	11383
43	4771	87	8115		
44	4847	88	8191		

Mean New Moons of the year 1504 — Golden Number 4

Left block — ranks and the years to be added:

ORDINES	Anni Domini — Adde
1	1428
2	1352
3	1276
4	1200
5	1124
6	1048
7	972
8	896
9	820

ORDINES	Anni Domini — Adde
10	744
11	668
12	592
13	516
14	440
15	364
16	288
17	212
18	136
19	60
20	(blank)

Rubric set vertically at the foot of this block: "Pro hisce annis fit additio temporis, quod ordinibus respondet." — For these years an addition of time is made, corresponding to the ranks.

Centre block — *Nouilunia media anni 1504. / Aur. Num. 4.* (Mean new moons of the year 1504, Golden Number 4), by month [Menses]:

Menses	D	H	M	S
I	16	11	35	57
F	15	0	20	0
M	15	13	4	3
A	14	1	48	6
M	13	14	32	9
I	12	3	16	12
I	11	16	0	15
A	10	4	44	18
S	8	17	28	21
O	8	6	12	24
N	6	18	56	27
D	6	7	40	30

Rubric below this block: "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." — For the years to the right a subtraction of time is made, corresponding to the ranks.

Right block — three panels of *Ordines / Anni Subtrahe* (ranks and the years to be subtracted):

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1580	45	4924	89	8268
2	1656	46	5000	90	8344
3	1732	47	5076	91	8420
4	1808	48	5152	92	8496
5	1884	49	5228	93	8572
6	1960	50	5304	94	8648
7	2036	51	5380	95	8724
8	2112	52	5456	96	8800
9	2188	53	5532	97	8876
10	2264	54	5608	98	8952
11	2340	55	5684	99	9028
12	2416	56	5760	100	9104
13	2492	57	5836	101	9180
14	2568	58	5912	102	9256
15	2644	59	5988	103	9332
16	2720	60	6064	104	9408
17	2796	61	6140	105	9484
18	2872	62	6216	106	9560
19	2948	63	6292	107	9636
20	3024	64	6368	108	9712
21	3100	65	6444	109	9788
22	3176	66	6520	110	9864
23	3252	67	6596	111	9940
24	3328	68	6672	112	10016
25	3404	69	6748	113	10092

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
26	3480	70	6824	114	10168
27	3556	71	6900	115	10244
28	3632	72	6976	116	10320
29	3708	73	7052	117	10396
30	3784	74	7128	118	10472
31	3860	75	7204	119	10548
32	3936	76	7280	120	10624
33	4012	77	7356	121	10700
34	4088	78	7432	122	10776
35	4164	79	7508	123	10852
36	4240	80	7584	124	10928
37	4316	81	7660	125	11004
38	4392	82	7736	126	11080
39	4468	83	7812	127	11156
40	4544	84	7888	128	11232
41	4620	85	7964	129	11308
42	4696	86	8040	130	11384
43	4772	87	8116		
44	4848	88	8192		

Mean New Moons of the year 1505 — Golden Number 5

ORDINES	Anni Domini — Adde
1	1429
2	1353
3	1277
4	1201
5	1125
6	1049
7	973
8	897

ORDINES	Anni Domini — Adde
9	821
10	745
11	669
12	593
13	517
14	441
15	365
16	289
17	213
18	137
19	61
20	<i>(blank)</i>

Rubric set vertically at the foot of this block: "Pro hisce annis fit additio temporis, quod ordinibus respondet." — For these years an addition of time is made, corresponding to the ranks.

Centre block — *Nouilunia media anni 1505. / Aur. Num. 5.:*

Menses	D	H	M	S
I	4	20	24	35
F	3	9	8	38
M	4	21	52	41
A	3	10	36	44
M	2	23	20	47
I	1	12	4	50
I <i>(brace: two entries)</i>	1	0	48	53
I <i>(brace: two entries)</i>	30	13	32	56
A	29	2	16	59
S	27	15	1	2
O	27	3	45	5
N	25	16	29	8
D	25	5	13	11

Rubric below this block: "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." — For the years to the right a subtraction of time is made, corresponding to the ranks.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1581	45	4925	89	8269
2	1657	46	5001	90	8345
3	1733	47	5077	91	8421
4	1809	48	5153	92	8497
5	1885	49	5229	93	8573
6	1961	50	5305	94	8649
7	2037	51	5381	95	8725
8	2113	52	5457	96	8801
9	2189	53	5533	97	8877
10	2265	54	5609	98	8953
11	2341	55	5685	99	9029
12	2417	56	5761	100	9105
13	2493	57	5837	101	9181
14	2569	58	5913	102	9257
15	2645	59	5989	103	9333
16	2721	60	6065	104	9409
17	2797	61	6141	105	9485
18	2873	62	6217	106	9561
19	2949	63	6293	107	9637
20	3025	64	6369	108	9713
21	3101	65	6445	109	9789
22	3177	66	6521	110	9865
23	3253	67	6597	111	9941
24	3329	68	6673	112	10017
25	3405	69	6749	113	10093
26	3481	70	6825	114	10169
27	3557	71	6901	115	10245

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
28	3633	72	6977	116	10321
29	3709	73	7053	117	10397
30	3785	74	7129	118	10473
31	3861	75	7205	119	10549
32	3937	76	7281	120	10625
33	4013	77	7357	121	10701
34	4089	78	7433	122	10777
35	4165	79	7509	123	10853
36	4241	80	7585	124	10929
37	4317	81	7661	125	11005
38	4393	82	7737	126	11081
39	4469	83	7813	127	11157
40	4545	84	7889	128	11233
41	4621	85	7965	129	11309
42	4697	86	8041	130	11385
43	4773	87	8117		
44	4849	88	8193		

Mean New Moons of the year 1506 — Golden Number 6

ORDINES	Anni Domini — Adde
1	1430
2	1354
3	1278
4	1202
5	1126
6	1050
7	974
8	898
9	822
10	746

ORDINES	Anni Domini — Adde
11	670
12	594
13	518
14	442
15	366
16	290
17	214
18	138
19	62
20	(blank)

Rubric set vertically at the foot of this block: "Pro hisce annis fit additio temporis, quod ordinibus respondet." — For these years an addition of time is made, corresponding to the ranks.

Centre block — *Nouilunia media anni 1506. / Aur. Num. 6.:*

Menses	D	H	M	S
I	23	17	57	17
F	22	6	41	20
M	23	19	25	23
A	22	8	9	26
M	21	20	53	29
I	20	9	37	32
I	19	22	21	35
A	18	11	5	38
S	16	23	49	41
O	16	12	33	44
N	15	1	17	47
D	14	14	1	50

Rubric below this block: "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." — For the years to the right a subtraction of time is made, corresponding to the ranks.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1582	45	4926	89	8270
2	1658	46	5002	90	8346
3	1734	47	5078	91	8422
4	1810	48	5154	92	8498
5	1886	49	5230	93	8574
6	1962	50	5306	94	8650
7	2038	51	5382	95	8726
8	2114	52	5458	96	8802
9	2190	53	5534	97	8878
10	2266	54	5610	98	8954
11	2342	55	5686	99	9030
12	2418	56	5762	100	9106
13	2494	57	5838	101	9182
14	2570	58	5914	102	9258
15	2646	59	5990	103	9334
16	2722	60	6066	104	9410
17	2798	61	6142	105	9486
18	2874	62	6218	106	9562
19	2950	63	6294	107	9638
20	3026	64	6370	108	9714
21	3102	65	6446	109	9790
22	3178	66	6522	110	9866
23	3254	67	6598	111	9942
24	3330	68	6674	112	10018
25	3406	69	6750	113	10094
26	3482	70	6826	114	10170
27	3558	71	6902	115	10246
28	3634	72	6978	116	10322
29	3710	73	7054	117	10398
30	3786	74	7130	118	10474

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3862	75	7206	119	10550
32	3938	76	7282	120	10626
33	4014	77	7358	121	10702
34	4090	78	7434	122	10778
35	4166	79	7510	123	10854
36	4242	80	7586	124	10930
37	4318	81	7662	125	11006
38	4394	82	7738	126	11082
39	4470	83	7814	127	11158
40	4546	84	7890	128	11234
41	4622	85	7966	129	11310
42	4698	86	8042	130	11386
43	4774	87	8118		
44	4850	88	8194		

Mean New Moons of the year 1507 — Golden Number 7

The page carries a single ruled frame holding, from left to right: the O R D I N E S. stub with its Anni Domini / Adde column; the Menses column with the four time-columns D H M S under the head *Nouilunia media anni 1507. / Aur.Num. 7.*; and three further panels each headed Ordines / Anni Subtrahe.

Left panel — orders and years to be added

Head: *Nouilunia media anni 1507. [Mean new moons of the year 1507] — Aur.Num. 7. [Golden Number 7]*

ORDINES	Anni Domini — Adde
1	1431
2	1355
3	1279
4	1203
5	1127
6	1051

ORDINES	Anni Domini — Adde
7	975
8	899
9	823
10	747
11	671
12	595
13	519
14	443
15	367
16	291
17	215
18	139
19	63
20	[blank]

[Margin: foot of the Anni Domini column, set vertically] For these years the addition of time is made which corresponds to the orders. [*Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Months and mean new moons, 1507 (Golden Number 7)

Menses	D	H	M	S
I	13	2	45	54
F	11	15	29	57
M	13	4	14	0
A	11	16	58	3
M	11	5	42	6
I	9	18	26	9
I	9	7	10	12
A	7	19	54	15
S	6	8	38	18
O	5	21	22	21
N	4	10	6	24

Menses	D	H	M	S
D	3	22	50	27

[Margin: below the time-columns] For the years to the right the subtraction of time is made which corresponds to the orders. [*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*]

The three Anni Subtrahe. panels [Years — subtract]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1583	45	4927	89	8271
2	1659	46	5003	90	8347
3	1735	47	5079	91	8423
4	1811	48	5155	92	8499
5	1887	49	5231	93	8575
6	1963	50	5307	94	8651
7	2039	51	5383	95	8727
8	2115	52	5459	96	8803
9	2191	53	5535	97	8879
10	2267	54	5611	98	8955
11	2343	55	5687	99	9031
12	2419	56	5763	100	9107
13	2495	57	5839	101	9183
14	2571	58	5915	102	9259
15	2647	59	5991	103	9335
16	2723	60	6067	104	9411
17	2799	61	6143	105	9487
18	2875	62	6219	106	9563
19	2951	63	6295	107	9639
20	3027	64	6371	108	9715
21	3103	65	6447	109	9791
22	3179	66	6523	110	9867
23	3255	67	6599	111	9943
24	3331	68	6675	112	10019

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
25	3407	69	6751	113	10095
26	3483	70	6827	114	10171
27	3559	71	6903	115	10247
28	3635	72	6979	116	10323
29	3711	73	7055	117	10399
30	3787	74	7131	118	10475
31	3863	75	7307	119	10551
32	3939	76	7283	120	10627
33	4015	77	7359	121	10703
34	4091	78	7435	122	10779
35	4167	79	7511	123	10855
36	4243	80	7587	124	10931
37	4319	81	7663	125	11007
38	4395	82	7739	126	11083
39	4471	83	7815	127	11159
40	4547	84	7891	128	11235
41	4623	85	7967	129	11311
42	4699	86	8043	130	11387
43	4775	87	8119		
44	4851	88	8195		

Mean New Moons of the year 1508 — Golden Number 8

Head: Nouilunia media anni 1508. [Mean new moons of the year 1508] — Aur.Num.
8. [Golden Number 8]

ORDINES	Anni Domini — Adde
1	1432
2	1356
3	1280
4	1204

ORDINES	Anni Domini — Adde
5	1128
6	1052
7	976
8	900
9	824
10	748
11	672
12	596
13	520
14	444
15	368
16	292
17	216
18	140
19	64
20	[blank]

[Margin: foot of the Anni Domini column, set vertically] For these years the addition of time is made which corresponds to the orders. [*Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Months and mean new moons, 1508 (Golden Number 8)

This is an embolismic year: the source sets thirteen lunation lines, with a single M braced over two of them.

Menses	D	H	M	S
I	2	11	34	32
F	1	0	18	35
M (braced, first line)	1	13	2	38
M (braced, second line)	31	1	46	41
A	29	14	30	44
M	29	3	14	47
I	27	15	58	50

Menses	D	H	M	S
I	27	4	42	53
A	25	17	26	56
S	24	6	10	59
O	23	18	55	2
N	22	7	39	5
D	21	20	23	8

[Margin: below the time-columns] For the years to the right the subtraction of time is made which corresponds to the orders. [*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*]

The three Anni Subtrahe. panels [Years — subtract]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1584	45	4928	89	8272
2	1660	46	5004	90	8348
3	1736	47	5080	91	8424
4	1812	48	5156	92	8500
5	1888	49	5232	93	8576
6	1964	50	5308	94	8652
7	2040	51	5384	95	8728
8	2116	52	5460	96	8804
9	2192	53	5536	97	8880
10	2268	54	5612	98	8956
11	2344	55	5688	99	9032
12	2420	56	5764	100	9108
13	2496	57	5840	101	9184
14	2572	58	5916	102	9260
15	2648	59	5992	103	9336
16	2724	60	6068	104	9412
17	2800	61	6144	105	9488
18	2876	62	6220	106	9564
19	2952	63	6296	107	9640

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
20	3028	64	6372	108	9716
21	3104	65	6448	109	9792
22	3180	66	6524	110	9868
23	3256	67	6600	111	9944
24	3332	68	6676	112	10020
25	3408	69	6752	113	10096
26	3484	70	6828	114	10172
27	3560	71	6904	115	10248
28	3636	72	6980	116	10324
29	3712	73	7056	117	10400
30	3788	74	7132	118	10476
31	3864	75	7208	119	10552
32	3940	76	7284	120	10626
33	4016	77	7360	121	10704
34	4092	78	7436	122	10780
35	4168	79	7512	123	10856
36	4244	80	7588	124	10932
37	4320	81	7664	125	11008
38	4396	82	7740	126	11084
39	4472	83	7816	127	11160
40	4548	84	7892	128	11236
41	4624	85	7968	129	11312
42	4700	86	8044	130	11388
43	4776	87	8120		
44	4852	88	8196		

Mean New Moons of the year 1509 — Golden Number 9

Head: Nouilunia media anni 1509. [Mean new moons of the year 1509] — Aur.Num.
9. [Golden Number 9]

ORDINES	Anni Domini — Adde
1	1433
2	1357
3	1281
4	1205
5	1129
6	1053
7	977
8	901
9	825
10	749
11	673
12	697
13	521
14	445
15	369
16	293
17	217
18	141
19	65
20	[blank]

[Margin: foot of the Anni Domini column, set vertically] For these years the addition of time is made which corresponds to the orders. [*Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Months and mean new moons, 1509 (Golden Number 9)

Menses	D	H	M	S
I	20	9	7	14
F	18	21	51	17
M	20	10	35	20
A	18	23	19	23
M	18	12	3	26

Menses	D	H	M	S
I	17	0	47	29
I	16	13	31	32
A	15	2	15	35
S	13	14	59	38
O	13	3	43	41
N	11	16	27	44
D	11	5	11	47

[Margin: below the time-columns] For the years to the right the subtraction of time is made which corresponds to the orders. [*Pro annis ad dexteram fit subtractio temporis, quod ordinibus respondet.*]

The three Anni Subtrahe. panels [Years — subtract]

The middle panel's stub-head is set Anni / Subtra / he. — without the hyphen that the outer two panels carry (Subtra-).

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtra he.	Ordine s	Anni Subtrahe.
1	1585	45	4929	89	8273
2	1661	46	5005	90	8349
3	1737	47	5081	91	8425
4	1813	48	5157	92	8501
5	1889	49	5233	93	8577
6	1965	50	5309	94	8653
7	2041	51	5385	95	8729
8	2117	52	5461	96	8805
9	2193	53	5537	97	8881
10	2269	54	5613	98	8957
11	2345	55	5689	99	9033
12	2421	56	5765	100	9109
13	2497	57	5841	101	9185
14	2573	58	5917	102	9261
15	2649	59	5993	103	9337

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtra he.	Ordine s	Anni Subtrahe.
16	2725	60	6069	104	9413
17	2801	61	6145	105	9489
18	2877	62	6221	106	9565
19	2953	63	6297	107	9641
20	3029	64	6373	108	9717
21	3105	65	6449	109	9793
22	3181	66	6525	110	9869
23	3257	67	6601	111	9945
24	3333	68	6677	112	10021
25	3409	69	6753	113	10097
26	3485	70	6829	114	10173
27	3561	71	6905	115	10249
28	3637	72	6981	116	10325
29	3713	73	7057	117	10401
30	3789	74	7133	118	10477
31	3865	75	7209	119	10553
32	3941	76	7285	120	10629
33	4017	77	7361	121	10705
34	4093	78	7437	122	10781
35	4169	79	7513	123	10857
36	4245	80	7589	124	10933
37	4321	81	7665	125	11009
38	4397	82	7741	126	11085
39	4473	83	7817	127	11161
40	4549	84	7893	128	11237
41	4625	85	7969	129	11313
42	4701	86	8045	130	11389
43	4777	87	8121		
44	4853	88	8197		

Mean new moons of the year 1510. Golden Number 10.

ORDINES — Years of the Lord — Add | Months | D H M S

Ordines	Adde
1	1434
2	1358
3	1282
4	1206
5	1130
6	1054
7	978
8	902
9	826
10	750
11	674
12	598
13	522
14	446
15	370
16	294
17	218
18	142
19	66
20	(ruled, blank)

[Margin, at the foot of the left-hand column, set vertically: For these years an addition of time is made, corresponding to the orders.]

Menses	D	H	M	S
I	9	17	55	52
F	8	6	39	55
M	9	19	23	58
A	8	8	8	1
M	7	20	52	4
I	6	9	36	7

Menses	D	H	M	S
I	5	22	20	10
A	4	11	4	13
S	2	23	48	16
O	2	12	32	19
N (brace, upper line)	1	1	16	22
N (brace, lower line)	30	14	0	25
D	30	2	44	28

[Margin, beneath the D H M S panel: For the years to the right a subtraction of time is made, corresponding to the orders.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1586	45	4930	89	8274
2	1662	46	5006	90	8350
3	1738	47	5082	91	8426
4	1814	48	5158	92	8502
5	1890	49	5234	93	8578
6	1966	50	5310	94	8654
7	2042	51	5386	95	8730
8	2118	52	5462	96	8806
9	2194	53	5538	97	8882
10	2270	54	5614	98	8958
11	2346	55	5690	99	9034
12	2422	56	5766	100	9110
13	2498	57	5842	101	9186
14	2574	58	5918	102	9262
15	2650	59	5994	103	9338
16	2726	60	6070	104	9414
17	2802	61	6146	105	9490
18	2878	62	6222	106	9566
19	2954	63	6298	107	9642
20	3030	64	6374	108	9718

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
21	3106	65	6450	109	9794
22	3182	66	6526	110	9870
23	3258	67	6602	111	9946
24	3334	68	6678	112	10022
25	3410	69	6754	113	10098
26	3486	70	6830	114	10174
27	3562	71	6906	115	10250
28	3638	72	6982	116	10326
29	3714	73	7058	117	10402
30	3790	74	7134	118	10478
31	3866	75	7210	119	10554
32	3942	76	7286	120	10630
33	4018	77	7362	121	10706
34	4094	78	7438	122	10782
35	4170	79	7514	123	10858
36	4246	80	7590	124	10934
37	4322	81	7666	125	11010
38	4398	82	7742	126	11086
39	4474	83	7818	127	11162
40	4550	84	7894	128	11238
41	4626	85	7970	129	11314
42	4702	86	8046	130	11390
43	4778	87	8122		
44	4854	88	8198		

Mean new moons of the year 1511. Golden Number 11.

Ordines	Adde
1	1435
2	1359
3	1283

Ordines	Adde
4	1207
5	1131
6	1055
7	979
8	903
9	827
10	751
11	675
12	599
13	523
14	447
15	371
16	295
17	219
18	143
19	67
20	(ruled, blank)

[Margin, at the foot of the left-hand column, set vertically: For these years an addition of time is made, corresponding to the orders.]

Menses	D	H	M	S
I	28	15	28	34
F	27	4	12	37
M	28	16	56	40
A	27	5	40	43
M	26	18	24	46
I	25	7	8	49
I	24	19	52	52
A	23	8	36	55
S	21	21	20	58
O	21	10	5	1

Menses	D	H	M	S
N	19	22	49	4
D	19	11	33	7

[Margin, beneath the D H M S panel: For the years to the right a subtraction of time is made, corresponding to the orders.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1587	45	4931	89	8275
2	1663	46	5007	90	8351
3	1739	47	5083	91	8427
4	1815	48	5159	92	8503
5	1891	49	5235	93	8579
6	1967	50	5311	94	8655
7	2043	51	5387	95	8731
8	2119	52	5463	96	8807
9	2195	53	5539	97	8883
10	2271	54	5615	98	8959
11	2347	55	5691	99	9035
12	2423	56	5767	100	9111
13	2499	57	5843	101	9187
14	2575	58	5919	102	9263
15	2651	59	5995	103	9339
16	2727	60	6071	104	9415
17	2803	61	6147	105	9491
18	2879	62	6223	106	9567
19	2955	63	6299	107	9643
20	3031	64	6375	108	9719
21	3107	65	6451	109	9795
22	3183	66	6527	110	9871
23	3259	67	6603	111	9947
24	3335	68	6679	112	10023
25	3411	69	6755	113	10099

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
26	3487	70	6831	114	10175
27	3563	71	6907	115	10251
28	3639	72	6983	116	10327
29	3715	73	7059	117	10403
30	3791	74	7135	118	10479
31	3867	75	7211	119	10555
32	3943	76	7287	120	10631
33	4019	77	7363	121	10707
34	4095	78	7439	122	10783
35	4171	79	7515	123	10859
36	4247	80	7591	124	10935
37	4323	81	7667	125	11011
38	4399	82	7743	126	11087
39	4475	83	7819	127	11163
40	4551	84	7895	128	11239
41	4627	85	7971	129	11315
42	4703	86	8047	130	11391
43	4779	87	8123		
44	4855	88	8199		

Mean new moons of the year 1512. Golden Number 12.

Ordines	Adde
1	1436
2	1360
3	1284
4	1208
5	1132
6	1056
7	980
8	904

Ordines	Adde
9	828
10	752
11	676
12	600
13	524
14	448
15	372
16	296
17	220
18	144
19	68
20	(ruled, blank)

[Margin, at the foot of the left-hand column, set vertically: For these years an addition of time is made, corresponding to the orders.]

Menses	D	H	M	S
I	18	0	17	11
F	16	13	1	14
M	17	1	45	17
A	15	14	29	20
M	15	3	13	23
I	13	15	57	26
I	13	4	41	29
A	11	17	25	32
S	10	6	9	35
O	9	18	53	38
N	8	7	37	41
D	7	20	21	44

[Margin, beneath the D H M S panel: For the years to the right a subtraction of time is made, corresponding to the orders.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1588	45	4932	89	8276
2	1664	46	5008	90	8352
3	1740	47	5084	91	8428
4	1816	48	5160	92	8504
5	1892	49	5236	93	8580
6	1968	50	5312	94	8656
7	2044	51	5388	95	8732
8	2120	52	5464	96	8808
9	2196	53	5540	97	8884
10	2272	54	5616	98	8960
11	2348	55	5692	99	9036
12	2424	56	5768	100	9112
13	2500	57	5844	101	9188
14	2576	58	5920	102	9264
15	2652	59	5996	103	9340
16	2728	60	6072	104	9416
17	2804	61	6148	105	9492
18	2880	62	6224	106	9568
19	2956	63	6300	107	9644
20	3032	64	6376	108	9720
21	3108	65	6452	109	9796
22	3184	66	6528	110	9872
23	3260	67	6604	111	9948
24	3336	68	6680	112	10024
25	3412	69	6756	113	10100
26	3488	70	6832	114	10176
27	3564	71	6908	115	10252
28	3640	72	6984	116	10328
29	3716	73	7060	117	10404
30	3792	74	7136	118	10480

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3868	75	7212	119	10556
32	3944	76	7288	120	10632
33	4020	77	7364	121	10708
34	4096	78	7440	122	10784
35	4172	79	7516	123	10860
36	4248	80	7592	124	10936
37	4324	81	7668	125	11012
38	4400	82	7744	126	11088
39	4476	83	7820	127	11164
40	4552	84	7896	128	11240
41	4628	85	7972	129	11316
42	4704	86	8048	130	11392
43	4780	87	8124		
44	4856	88	8200		

Mean new moons of the year 1513 (Golden Number 13)

Stub-heads as printed: ORDINES | Anni Domini (Adde) | Menses | Nouilunia media anni 1513. / Aur. num. 13. (D | H | M | S) | three repeated panels Ordines / Anni Subtrahe.

Left panel — years to be added, by order

ORDINES	Anni Domini — Adde
1	1437
2	1361
3	1285
4	1209
5	1133
6	1057
7	981
8	905
9	829

ORDINES	Anni Domini — Adde
10	753
11	677
12	601
13	525
14	449
15	373
16	297
17	221
18	145
19	69
20	<i>(ruled, blank)</i>

Foot of this panel: "For these years the addition of time is made which corresponds to the orders." [*Pro hiſce annis fit additio temporis, quod ordinibus reſpondet.*]

Centre panel — mean new moons of the year 1513, Golden Number 13

Menses	D	H	M	S
I	6	9	5	49
F	4	21	49	52
M	6	10	33	55
A	4	23	17	58
M	4	12	2	1
I	3	0	46	4
I	2	13	30	7
<i>(no initial set)</i>	1	2	14	10
A	30	14	58	13
S	29	3	42	16
O	28	16	26	19
N	27	5	10	22
D	26	17	54	25
<i>(ruled, blank)</i>				

Foot of this panel: "For the years to the right the subtraction of time is made which corresponds to the orders." [*Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Right-hand panels — years to be subtracted, by order

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1589	45	4933	89	8277
2	1665	46	5009	90	8353
3	1741	47	5085	91	8429
4	1817	48	5161	92	8505
5	1893	49	5237	93	8581
6	1969	50	5313	94	8657
7	2045	51	5389	95	8733
8	2121	52	5465	96	8809
9	2197	53	5541	97	8885
10	2273	54	5617	98	8961
11	2349	55	5693	99	9037
12	2425	56	5769	100	9113
13	2501	57	5845	101	9189
14	2577	58	5921	102	9265
15	2653	59	5997	103	9341
16	2729	60	6073	104	9417
17	2805	61	6149	105	9493
18	2881	62	6225	106	9569
19	2957	63	6301	107	9645
20	3035	64	6377	108	9721
21	3109	65	6453	109	9797
22	3185	66	6529	110	9873
23	3261	67	6605	111	9949
24	3337	68	6681	112	10025
25	3413	69	6757	113	10101
26	3489	70	6833	114	10177

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
27	3565	71	6909	115	10253
28	3641	72	6985	116	10329
29	3717	73	7061	117	10405
30	3793	74	7137	118	10481
31	3869	75	7213	119	10557
32	3945	76	7289	120	10633
33	4021	77	7365	121	10709
34	4097	78	7441	122	10785
35	4173	79	7517	123	10861
36	4249	80	7593	124	10937
37	4325	81	7669	125	11013
38	4401	82	7745	126	11089
39	4477	83	7821	127	11165
40	4553	84	7897	128	11241
41	4629	85	7973	129	11317
42	4705	86	8049	130	11393
43	4781	87	8125		
44	4857	88	8201		

Mean new moons of the year 1514 (Golden Number 14)

Left panel — years to be added, by order

ORDINES	Anni Domini — Adde
1	1438
2	1362
3	1286
4	1210
5	1134
6	1058
7	982
8	906

ORDINES	Anni Domini — Adde
9	830
10	754
11	678
12	602
13	526
14	450
15	374
16	298
17	222
18	146
19	70
20	<i>(ruled, blank)</i>

Foot of this panel: "For these years the addition of time is made which corresponds to the orders." [*Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Centre panel — mean new moons of the year 1514, Golden Number 14

Menses	D	H	M	S
I	25	6	38	31
F	23	19	22	34
M	25	8	6	37
A	23	20	50	40
M	23	9	34	43
I	21	22	18	46
I	21	11	2	49
A	19	23	46	52
S	18	12	30	55
O	18	1	14	58
N	16	13	59	1
D	16	2	43	4
<i>(ruled, blank)</i>				

Foot of this panel: "For the years to the right the subtraction of time is made which corresponds to the orders." [*Pro annis ad dextram fit subtrahatio téporis, quod ordinibus respondet.*]

Right-hand panels — years to be subtracted, by order

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1590	45	4934	89	8278
2	1666	46	5010	90	8354
3	1742	47	5086	91	8430
4	1818	48	5162	92	8506
5	1894	49	5238	93	8582
6	1970	50	5314	94	8658
7	2046	51	5390	95	8734
8	2122	52	5466	96	8810
9	2198	53	5542	97	8886
10	2274	54	5618	98	8962
11	2350	55	5694	99	9038
12	2426	56	5770	100	9114
13	2502	57	5846	101	9190
14	2578	58	5922	102	9266
15	2654	59	5998	103	9342
16	2730	60	6074	104	9418
17	2806	61	6150	105	9494
18	2882	62	6226	106	9570
19	2958	63	6302	107	9646
20	3034	64	6378	108	9722
21	3110	65	6454	109	9798
22	3186	66	6530	110	9874
23	3262	67	6606	111	9950
24	3338	68	6682	112	10026
25	3414	69	6758	113	10102
26	3490	70	6834	114	10178

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
27	3566	71	6910	115	10254
28	3642	72	6986	116	10330
29	3718	73	7062	117	10406
30	3794	74	7138	118	10482
31	3870	75	7214	119	10558
32	3946	76	7290	120	10634
33	4022	77	7366	121	10710
34	4098	78	7442	122	10786
35	4174	79	7518	123	10862
36	4250	80	7594	124	10938
37	4326	81	7670	125	11014
38	4402	82	7746	126	11090
39	4478	83	7822	127	11166
40	4554	84	7898	128	11242
41	4630	85	7974	129	11318
42	4706	86	8050	130	11394
43	4782	87	8126		
44	4858	88	8202		

Mean new moons of the year 1515 (Golden Number 15)

Left panel — years to be added, by order

ORDINES	Anni Domini — Adde
1	1439
2	1363
3	1287
4	1211
5	1135
6	1069
7	983
8	907

ORDINES	Anni Domini — Adde
9	831
10	755
11	679
12	603
13	527
14	451
15	375
16	299
17	223
18	147
19	71
20	<i>(ruled, blank)</i>

Foot of this panel: "For these years the addition of time is made which corresponds to the orders." [*Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Centre panel — mean new moons of the year 1515, Golden Number 15

Menses	D	H	M	S
I	14	15	27	9
F	13	4	11	12
M	14	16	55	15
A	13	5	36	18
M	12	18	23	21
I	11	7	7	24
I	10	19	51	27
A	9	8	35	30
S	7	21	19	33
O	7	10	3	36
N	5	22	47	39
D	5	11	31	42
<i>(ruled, blank)</i>				

Foot of this panel: "For the years to the right the subtraction of time is made which corresponds to the orders." [*Pro annis ad dextram fit subtrahctio téporis, quod ordinibus respondet.*]

Right-hand panels — years to be subtracted, by order

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1591	45	4935	89	8279
2	1667	46	5011	90	8355
3	1743	47	5087	91	8431
4	1819	48	5163	92	8507
5	1895	49	5239	93	8583
6	1971	50	5315	94	8659
7	2047	51	5391	95	8735
8	2123	52	5467	96	8811
9	2199	53	5543	97	8887
10	2275	54	5619	98	8963
11	2351	55	5695	99	9039
12	2427	56	5771	100	9115
13	2503	57	5847	101	9191
14	2579	58	5923	102	9267
15	2655	59	5999	103	9343
16	2731	60	6075	104	9419
17	2807	61	6151	105	9495
18	2883	62	6227	106	9571
19	2959 [?]	63	6303	107	9647
20	3035	64	6379	108	9723
21	3111	65	6455	109	9799
22	3187	66	6531	110	9875
23	3263	67	6607	111	9941
24	3339	68	6683	112	10027
25	3415	69	6759	113	10103
26	3491	70	6835	114	10179

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
27	3567	71	6911	115	10255
28	3643	72	6987	116	10331
29	3719	73	7063	117	10407
30	3795	74	7139	118	10483
31	3871	75	7215	119	10559
32	3947	76	7291	120	10635
33	4023	77	7367	121	10711
34	4099	78	7443	122	10787
35	4175	79	7519	123	10863
36	4251	80	7595	124	10939
37	4327	81	7671	125	11015
38	4403	82	7747	126	11091
39	4479	83	7823	127	11167
40	4555	84	7899	128	11243
41	4631	85	7975	129	11319
42	4707	86	8051	130	11395
43	4783	87	8127		
44	4859	88	8203		

Mean new moons of the year 1516 — Golden Number 16

Full-page table of Caput XIII, continuing the year-by-year series of mean new moons.

Stub-heads as printed (the two leftmost heads are set turned, reading upward): O R D I N E S. — Anni Domini — Menfes. — Nouilunia media anni 1516. — Aur. num. 16. — D | H | M | S — and, over each of the three right-hand panels, Ordines (turned) with Anni Subtrahe.

Orders / Years of the Lord — Add

Ordines	Anni Domini — Adde
1	1440
2	1364

Ordines	Anni Domini — Adde
3	1288
4	1212
5	1136
6	1060
7	984
8	908
9	832
10	756
11	680
12	604
13	528
14	452
15	376
16	300
17	224
18	148
19	72
20	<i>(blank)</i>

[Margin: (turned, reading upward, beneath the Anni Domini column) For these years the time corresponding to the Orders is to be **added**.]

Months / Mean new moons of the year 1516 — Golden Number 16

Menfes	D	H	M	S
I	4	0	15	47
F	2	12	59	50
M	3	1	43	53
A	1	14	27	56
M <i>(braced, two lunations)</i>	1	3	11	59
"	30	15	56	2
I	29	4	40	5
I	28	17	24	8

Menfes	D	H	M	S
A	27	6	8	11
S	25	18	52	14
O	25	7	36	17
N	23	20	20	20
D	23	9	4	23

[Margin: (at the foot of the lunation panel) For the years to the right, the time corresponding to the Orders is to be **subtracted**.]

Orders / Years — Subtract (three panels set side by side across the page)

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1592	45	4936	89	8280
2	1668	46	5012	90	8356
3	1744	47	5088	91	8432
4	1820	48	5164	92	8508
5	1896	49	5240	93	8584
6	1972	50	5316	94	8660
7	2048	51	5392	95	8736
8	2124	52	5468	96	8812
9	2200	53	5544	97	8888
10	2276	54	5620	98	8964
11	2352	55	5696	99	9040
12	2428	56	5772	100	9116
13	2504	57	5848	101	9192
14	2580	58	5924	102	9268
15	2656	59	6000	103	9344
16	2732	60	6076	104	9420
17	2808	61	6152	105	9496
18	2884	62	6228	106	9572
19	2960	63	6304	107	9648
20	3036	64	6380	108	9724

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
21	3112	65	6456	109	9800
22	3188	66	6532	110	9876
23	3264	67	6608	111	9952
24	3340	68	6684	112	10028
25	3416	69	6760	113	10104
26	3492	70	6836	114	10180
27	3568	71	6912	115	10256
28	3644	72	6988	116	10332
39	3720	73	7064	117	10408
30	3796	74	7140	118	10484
31	3872	75	7216	119	10560
32	3948	76	7292	120	10636
33	4024	77	7368	121	10712
34	4100	78	7444	122	10788
35	4176	79	7520	123	10864
36	4252	80	7596	124	10940
37	4328	81	7672	125	11026
38	4404	82	7748	126	11092
39	4480	83	7824	127	11168
40	4556	84	7900	128	11244
41	4632	85	7976	129	11320
42	4708	86	8052	130	11396
43	4784	87	8128		
44	4860	88	8204		

Mean new moons of the year 1517 — Golden Number 17

Same layout; heads read Nouilunia media anni 1517. and Aur. num. 17.

Orders / Years of the Lord — Add

Ordines	Anni Domini — Adde
1	1441

Ordines	Anni Domini — Adde
2	1365
3	1289
4	1213
5	1137
6	1061
7	985
8	909
9	833
10	757
11	681
12	605
13	529
14	453
15	377
16	301
17	225
18	149
19	73
20	<i>(blank)</i>

[Margin: (turned, reading upward, beneath the Anni Domini column) For these years the time corresponding to the Orders is to be **added**.]

Months / Mean new moons of the year 1517 — Golden Number 17

Menfes	D	H	M	S
I	21	21	48	29
F	20	10	32	32
M	21	23	16	35
A	20	12	0	38
M	20	0	44	41
I	18	13	28	44
I	18	2	12	47

Menfes	D	H	M	S
A	16	14	56	50
S	15	3	40	53
O	14	16	24	56
N	13	5	8	59
D	12	17	53	2

[Margin: (at the foot of the lunation panel) For the years to the right, the time corresponding to the Orders is to be **subtracted**.]

Orders / Years — Subtract

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1593	45	4937	89	8281
2	1669	46	5013	90	8357
3	1745	47	5089	91	8433
4	1821	48	5165	92	8509
5	1897	49	5241	93	8585
6	1973	50	5317	94	8661
7	2049	51	5393	95	8737
8	2125	52	5469	96	8813
9	2201	53	5545	97	8889
10	2277	54	5621	98	8965
11	2353	55	5697	99	9041
12	2429	56	5773	100	9117
13	2505	57	5849	101	9193
14	2581	58	5925	102	9269
15	2657	59	6001	103	9345
16	2733	60	6077	104	9421
17	2809	61	6153	105	9497
18	2885	62	6229	106	9573
19	2961	63	6305	107	9649
20	3037	64	6381	108	9725

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
21	3113	65	6457	109	9801
22	3189	66	6533	110	9877
23	3265	67	6609	111	9943
24	3341	68	6685	112	10029
25	3417	69	6761	113	10105
26	3493	70	6837	114	10181
27	3569	71	6913	115	10257
28	3645	72	6989	116	10333
29	3721	73	7065	117	10709
30	3797	74	7141	118	10485
31	3873	75	7217	119	10561
32	3949	76	7293	120	10637
33	4025	77	7369	121	10713
34	4101	78	7445	122	10789
35	4177	79	7521	123	10865
36	4253	80	7597	124	10941
37	4329	81	7673	125	11017
38	4405	82	7749	126	11093
39	4481	83	7825	127	11169
40	4557	84	7901	128	11245
41	4633	85	7977	129	11321
42	4609	86	8053	130	11397
43	4785	87	8129		
44	4861	88	8205		

Mean new moons of the year 1518 — Golden Number 18

Same layout; heads read Nouilunia media anni 1518. and Aur. num. 18.

Orders / Years of the Lord — Add

Ordines	Anni Domini — Adde
1	1442

Ordines	Anni Domini — Adde
2	1366
3	1290
4	1214
5	1138
6	1062
7	986
8	910
9	834
10	758
11	682
12	606
13	530
14	454
15	378
16	302
17	226
18	150
19	74
20	<i>(blank)</i>

[Margin: (turned, reading upward, beneath the Anni Domini column) For these years the time corresponding to the Orders is to be **added**.]

Months / Mean new moons of the year 1518 — Golden Number 18

Menfes	D	H	M	S
I	11	6	37	6
F	9	19	21	9
M	11	8	5	12
A	9	20	49	15
M	9	9	33	18
I	7	22	17	21
I	7	11	1	24

Menfes	D	H	M	S
A	5	23	45	27
S	4	12	29	30
O	4	1	13	33
N	2	13	57	36
D (<i>braced, two lunations</i>)	2	2	41	39
"	31	15	25	44

[Margin: (at the foot of the lunation panel) For the years to the right, the time corresponding to the Orders is to be **subtracted**.]

Orders / Years — Subtract

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1594	45	4938	89	8282
2	1670	46	5014	90	8358
3	1746	47	5090	91	8434
4	1822	48	5166	92	8510
5	1898	49	5242	93	8586
6	1974	50	5318	94	8662
7	2050	51	5394	95	8738
8	2126	52	5470	96	8814
9	2202	53	5546	97	8890
10	2278	54	5622	98	8966
11	2354	55	5698	99	9042
12	2430	56	5774	100	9118
13	2506	57	5850	101	9194
14	2582	58	5926	102	9270
15	2658	59	6002	103	9346
16	2734	60	6078	104	9422
17	2810	61	6154	105	9498
18	2886	62	6230	106	9574
19	2962	63	6306	107	9650

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
20	3038	64	6382	108	9726
21	3114	65	6458	109	9802
22	3190	66	6534	110	9878
23	3266	67	6610	111	9944
24	334[?]	68	6686	112	10030
25	3418	69	6762	113	10106
26	3494	70	6838	114	10182
27	3570	71	6914	115	10258
28	3646	72	6990	116	10334
29	3722	73	7066	117	10410
30	3798	74	7142	118	10486
31	3874	75	7218	119	10562
32	3950	76	7294	120	10638
33	4026	77	7370	121	10714
34	4102	78	7446	122	10790
35	4178	79	7522	123	10866
36	4254	80	7598	124	10942
37	4330	81	7674	125	11018
38	4406	82	7750	126	11094
39	4482	83	7826	127	11170
40	4558	84	7902	128	11246
41	4634	85	7978	129	11322
42	4710	86	8054	130	11398
43	4786	87	8130		
44	4862	88	8206		

Table. Mean new moons of the year 1519, Golden Number 19. The page sets five panels across its width: at the left the ORDINES scale with its Anni Domini | Adde column; then the Menses initials with the lunation times in days, hours, minutes and seconds; then three Ordines | Anni Subtrahe. panels running 1–44, 45–88, and 89–130.

Nouilunia media anni 1519. — Mean new moons of the year 1519

Aur. num. 19. [Golden Number 19]

Menses [Months]	D	H	M	S
I	30	4	9	47
F	28	16	53	50
M	30	5	37	53
A	28	18	21	56
M	28	7	5	59
I	26	19	50	2
I	26	8	34	5
A	24	21	18	8
S	23	10	2	11
O	22	22	46	14
N	21	11	30	17
D	21	0	14	20

Beneath the lunation panel, at the foot of the column: **Pro annis ad dextram fit subtractio tēporis, quod ordinibus respondet.** — "For the years to the right, the subtraction of time is made that corresponds to the ordines."

ORDINES / Anni Domini — Adde

ORDINES	Adde
1	1443
2	1367
3	1291
4	1215
5	1139
6	1063
7	987
8	911
9	835
10	759
11	683

ORDINES	Adde
12	607
13	531
14	455
15	379
16	303
17	227
18	151
19	75
20	(blank)

Set sideways at the foot of this column: **Pro hisce annis fit additio temporis, quod ordinibus respondet.** — "For these years, the addition of time is made that corresponds to the ordines."

Anni Subtrahe. — Years for subtraction (three panels)

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1595	45	4939	89	8283
2	1671	46	5015	90	8359
3	1747	47	5091	91	8435
4	1823	48	5167	92	8511
5	1899	49	5243	93	8587
6	1975	50	5319	94	8663
7	2051	51	5395	95	8739
8	2127	52	5471	96	8815
9	2203	53	5547	97	8891
10	2279	54	5623	98	8967
11	2355	55	5699	99	9043
12	2431	56	5775	100	9119
13	2507	57	5851	101	9195
14	2583	58	5927	102	9271
15	2659	59	6003	103	9347
16	2735	60	6079	104	9423

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
17	2811	61	6155	105	9499
18	2887	62	6231	106	9575
19	2963	63	6307	107	9651
20	3039	64	6383	108	9727
21	3115	65	6459	109	9803
22	3191	66	6535	110	9879
23	3267	67	6611	111	9955
24	3343	68	6687	112	10031
25	3419	69	6763	113	10107
26	3495	70	6839	114	10183
27	3571	71	6915	115	10259
28	3647	72	6991	116	10335
29	3723	73	7067	117	10411
30	3799	74	7143	118	10487
31	3875	75	7219	119	10563
32	3951	76	7295	120	10639
33	4027	77	7371	121	10715
34	4103	78	7447	122	10791
35	4179	79	7523	123	10867
36	4255	80	7599	124	10943
37	4331	81	7675	125	11019
38	4407	82	7751	126	11095
39	4483	83	7827	127	11171
40	4559	84	7903	128	11247
41	4635	85	7979	129	11323
42	4711	86	8055	130	11399
43	4787	87	8131		
44	4863	88	8207		

Table. Mean new moons of the year 1520, Golden Number 1 — the nineteen-year series begins again. Same five-panel layout as the preceding page.

Nouilunia media anni 1520. — Mean new moons of the year 1520

Aur. num. 1. [Golden Number 1]

Menses [Months]	D	H	M	S
I	19	12	58	26
F	18	1	42	29
M	18	14	26	32
A	17	3	10	35
M	16	15	54	38
I	15	4	38	41
I	14	17	22	44
A	13	6	6	47
S	11	18	50	50
O	11	7	34	53
N	9	20	18	56
D	9	9	2	59

At the foot of the lunation column: **Pro annis ad dextram fit subtractio tēporis, quod ordinibus respondet.** — "For the years to the right, the subtraction of time is made that corresponds to the ordines."

ORDINES / Anni Domini — Adde

ORDINES	Adde
1	1444
2	1368
3	1292
4	1216
5	1140
6	1064
7	988
8	912
9	836

ORDINES	Adde
10	760
11	684
12	608
13	532
14	456
15	380
16	304
17	228
18	152
19	76
20	(blank)

Set sideways at the foot of this column: **Pro hisce annis fit additio temporis, quod ordinibus respondet.** — "For these years, the addition of time is made that corresponds to the ordines."

Anni Subtrahe. — Years for subtraction (three panels)

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1596	45	4940	89	8284
2	1672	46	5016	90	8360
3	1748	47	5092	91	8436
4	1824	48	5168	92	8512
5	1900	49	5244	93	8588
6	1976	50	5320	94	8664
7	2052	51	5396	95	8740
8	2128	52	5472	96	8816
9	2204	53	5548	97	8892
10	2280	54	5624	98	8968
11	2356	55	5700	99	9044
12	2432	56	5776	100	9120
13	2508	57	5852	101	9196
14	2584	58	5928	102	9272

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
15	2660	59	6004	103	9348
16	2736	60	6080	104	9424
17	2812	61	6156	105	9500
18	2888	62	6232	106	9576
19	2964	63	6308	107	9652
20	3040	64	6384	108	9728
21	3116	65	6460	109	9804
22	3192	66	6536	110	9880
23	3268	67	6612	111	9956
24	3344	68	6688	112	10032
25	3420	69	6764	113	10108
26	3496	70	6840	114	10184
27	3572	71	6916	115	10260
28	3648	72	6992	116	10336
29	3724	73	7068	117	10412
30	3800	74	7144	118	10488
31	3876	75	7220	119	10564
32	3952	76	7296	120	10640
33	4028	77	7372	121	10716
34	4104	78	7448	122	10792
35	4180	79	7524	123	10868
36	4256	80	7600	124	10944
37	4332	81	7676	125	11020
38	4408	82	7752	126	11096
39	4484	83	7828	127	11172
40	4560	84	7904	128	11248
41	4636	85	7980	129	11324
42	4712	86	8056	130	11400
43	4788	87	8132		

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
44	4864	88	8208		

(No press-figure or signature letter is set at the foot of this page.)

Table. Mean new moons of the year 1521, Golden Number 2 — an embolismic year, with thirteen lunation lines: two September entries are braced together to the single month initial S.

Nouilunia media anni 1521. — Mean new moons of the year 1521

Aur. num. 2. [Golden Number 2]

Menses [Months]	D	H	M	S
I	7	21	47	4
F	6	10	31	7
M	7	23	15	10
A	6	11	59	13
M	6	0	43	16
I	4	13	27	19
I	4	2	11	22
A	2	14	55	25
S (<i>braced, 1st</i>)	1	3	39	28
S (<i>braced, 2nd</i>)	30	16	23	31
O	30	5	7	34
N	28	17	51	37
D	28	6	35	40

At the foot of the lunation column: **Pro annis ad dextram fit subtractio tēporis, quod ordinibus respondet.** — "For the years to the right, the subtraction of time is made that corresponds to the ordines."

ORDINES / Anni Domini — Adde

ORDINES	Adde
1	1445
2	1369

ORDINES	Adde
3	1293
4	1217
5	1141
6	1065
7	989
8	913
9	837
10	761
11	685
12	609
13	533
14	457
15	381
16	305
17	229
18	153
19	77
20	1

Set sideways at the foot of this column: **Pro hisce annis fit additio temporis, quod ordinibus respondet.** — "For these years, the addition of time is made that corresponds to the ordines."

Anni Subtrahe. — Years for subtraction (three panels)

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1597	45	4941	89	8285
2	1673	46	5017	90	8361
3	1749	47	5093	91	8437
4	1825	48	5169	92	8513
5	1901	49	5245	93	8589
6	1977	50	5321	94	8665
7	2053	51	5397	95	8741

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
8	2129	52	5473	96	8817
9	2205	53	5549	97	8893
10	2281	54	5625	98	8969
11	2357	55	5701	99	9045
12	2433	56	5777	100	9121
13	2509	57	5853	101	9197
14	2585	58	5929	102	9273
15	2661	59	6005	103	9349
16	2737	60	6081	104	9425
17	2813	61	6157	105	9501
18	2889	62	6233	106	9577
19	2965	63	6309	107	9653
20	3041	64	6385	108	9729
21	3117	65	6461	109	9805
22	3193	66	6537	110	9881
23	3269	67	6613	111	9957
24	3345	68	6689	112	10033
25	3421	69	6765	113	10109
26	3497	70	6841	114	10185
27	3573	71	6917	115	10261
28	3649	72	6993	116	10337
29	3725	73	7069	117	10413
30	3801	74	7145	118	10489
31	3877	75	7221	119	10565
32	3953	76	7297	120	10641
33	4029	77	7373	121	10717
34	4105	78	7449	122	10793
35	4181	79	7525	123	10869
36	4257	80	7601	124	10945

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
37	4333	81	7677	125	11021
38	4409	82	7753	126	11097
39	4485	83	7829	127	11173
40	4561	84	7905	128	11249
41	4637	85	7981	129	11325
42	4713	86	8057	130	11401
43	4789	87	8133		
44	4865	88	8209		

Mean new moons of the year 1522 — Golden number 3

Left panel — orders and years of the Lord.

Stub-heads as printed: ORDINES. | Anni Domini (with sub-head Adde).

ORDINES.	Anni Domini — Adde
1	1446
2	1370
3	1294
4	1218
5	1142
6	1066
7	990
8	914
9	838
10	762
11	686
12	610
13	534
14	458
15	382
16	306
17	230

ORDINES.	Anni Domini — Adde
18	154
19	78
20	2

Foot-note set vertically in the panel: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition is made of the time answering to the orders."

Centre panel — the mean new moons.

Column heading as printed: Nouilunia media anni 1522. / Aur. num. 3. Sub-heads D | H | M | S (days, hours, minutes, seconds). The Menfes. column carries the month initials.

Menfes.	D	H	M	S
I	26	19	19	46
F	25	8	3	49
M	26	20	47	52
A	25	9	31	55
M	24	22	15	58
I	23	11	0	1
I	22	23	44	4
A	21	12	28	7
S	20	1	12	10
O	19	13	56	13
N	18	2	40	16
D	17	15	24	19

Note set at the foot of the centre panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction is made of the time answering to the orders."

Right-hand panels — orders and years to be subtracted.

Three panels across the page, each headed Ordines | Anni Subtrahe.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1598	45	4942	89	8286
2	1674	46	5018	90	8362
3	1750	47	5094	91	8438
4	1826	48	5170	92	8514
5	1902	49	5246	93	8590
6	1978	50	5322	94	8666
7	2054	51	5398	95	8742
8	2130	52	5474	96	8818
9	2206	53	5550	97	8894
10	2282	54	5626	98	8970
11	2358	55	5702	99	9046
12	2434	56	5778	100	9122
13	2510	57	5854	101	9198
14	2586	58	5930	102	9274
15	2662	59	6006	103	9350
16	2738	60	6082	104	9426
17	2814	61	6158	105	9502
18	2890	62	6234	106	9578
19	2966	63	6310	107	9654
20	3042	64	6386	108	9730
21	3118	65	6462	109	9806
22	3194	66	6538	110	9882
23	3270	67	6614	111	9958
24	3346	68	6690	112	10034
25	3422	69	6766	113	10110
26	3498	70	6842	114	10186
27	3574	71	6918	115	10262
28	3650	72	6994	116	10338
29	3726	73	7070	117	10414
30	3802	74	7146	118	10490

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3878	75	7222	119	10566
32	3954	76	7298	120	10642
33	4030	77	7374	121	10718
34	4106	78	7450	122	10794
35	4182	79	7526	123	10870
36	4258	80	7602	124	10946
37	4334	81	7678	125	11022
38	4410	82	7754	126	11098
39	4486	83	7830	127	11174
40	4562	84	7906	128	11250
41	4638	85	7982	129	11326
42	4714	86	8058	130	11402
43	4790	87	8134		
44	4866	88	8210		

Mean new moons of the year 1523 — Golden number 4

ORDINES.	Anni Domini — Adde
1	1447
2	1371
3	1295
4	1219
5	1143
6	1067
7	991
8	915
9	839
10	763
11	687
12	611
13	535
14	459

15	383
16	307
17	231
18	155
19	79
20	3

Foot-note set vertically in the panel: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition is made of the time answering to the orders."

Column heading as printed: Nouilunia media anni 1523. / Aur.Num. 4.

Menfes.	D	H	M	S
I	16	14	8	23
F	14	16	52	26
M	16	5	36	29
A	14	18	20	32
M	14	7	4	35
I	12	19	48	38
I	12	8	32	41
A	10	21	16	44
S	9	10	0	47
O	8	22	44	50
N	7	11	28	53
D	7	0	12	56

Note at the foot of the centre panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction is made of the time answering to the orders."

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1599	45	4943	89	8287

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
2	1675	46	5019	90	8363
3	1751	47	5095	91	8439
4	1827	48	5171	92	8515
5	1903	49	5247	93	8591
6	1979	50	5323	94	8667
7	2055	51	5399	95	8743
8	2131	52	5475	96	8819
9	2207	53	5551	97	8895
10	2283	54	5627	98	8971
11	2359	55	5703	99	9047
12	2435	56	5779	100	9123
13	2511	57	5855	101	9199
14	2587	58	5931	102	9275
15	2663	59	6007	103	9351
16	2739	60	6083	104	9427
17	2815	61	6159	105	9503
18	2891	62	6235	106	9579
19	2967	63	6311	107	9655
20	3043	64	6387	108	9731
21	3119	65	6463	109	9807
22	3195	66	6539	110	9883
23	3271	67	6615	111	9959
24	3347	68	6691	112	10035
25	3423	69	6767	113	10111
26	3499	70	6843	114	10187
27	3575	71	6919	115	10263
28	3651	72	6995	116	10339
29	3727	73	7071	117	10415
30	3803	74	7147	118	10491
31	3879	75	7223	119	10567

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
32	3955	76	7299	120	10643
33	4031	77	7375	121	10719
34	4107	78	7451	122	10795
35	4183	79	7527	123	10871
36	4259	80	7603	124	10947
37	4335	81	7679	125	11023
38	4411	82	7755	126	11099
39	4487	83	7831	127	11175
40	4563	84	7907	128	11251
41	4639	85	7983	129	11327
42	4715	86	8059	130	11403
43	4791	87	8135		
44	4867	88	8211		

Mean new moons of the year 1524 — Golden number 5

ORDINES.	Anni Domini — Adde
1	1448
2	1372
3	1296
4	1220
5	1144
6	1068
7	992
8	916
9	840
10	764
11	688
12	612
13	536
14	460
15	384

16	308
17	232
18	156
19	80
20	4

Foot-note set vertically in the panel: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition is made of the time answering to the orders."

Column heading as printed: Nouilunia media anni 1524. / Aur.Num. 5. This is an embolismic year: thirteen lunations are set, and the two June entries are joined by a brace to a single month initial I.

Menfes.	D	H	M	S
I	5	12	57	1
F	4	1	41	4
M	4	14	25	7
A	3	3	9	10
M	2	15	53	13
I (braced, first)	1	4	37	16
I (braced, second)	30	17	21	19
I	30	6	5	22
A	28	18	49	25
S	27	7	33	28
O	26	20	17	31
N	25	9	1	34
D	24	21	45	37

Note at the foot of the centre panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction is made of the time answering to the orders."

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1600	45	4944	89	8288
2	1676	46	5020	90	8364
3	1752	47	5096	91	8440
4	1828	48	5172	92	8516
5	1904	49	5248	93	8592
6	1980	50	5324	94	8668
7	2056	51	5400	95	8744
8	2132	52	5476	96	8820
9	2208	53	5552	97	8896
10	2284	54	5628	98	8972
11	2360	55	5704	99	9048
12	2436	56	5780	100	9124
13	2512	57	5856	101	9200
14	2588	58	5932	102	9276
15	2664	59	6008	103	9352
16	2740	60	6084	104	9428
17	2816	61	6160	105	9504
18	2892	62	6236	106	9580
19	2968	63	6312	107	9656
20	3044	64	6388	108	9732
21	3120	65	6464	109	9808
22	3196	66	6540	110	9884
23	3272	67	6616	111	9960
24	3348	68	6692	112	10036
25	3424	69	6768	113	10012
26	3500	70	6844	114	10188
27	3576	71	6920	115	10264
28	3652	72	6996	116	10340
29	3728	73	7072	117	10416
30	3804	74	7148	118	10492

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3880	75	7224	119	10568
32	3956	76	7300	120	10644
33	4032	77	7376	121	10720
34	4108	78	7452	122	10796
35	4184	79	7528	123	10872
36	4260	80	7604	124	10948
37	4336	81	7680	125	11024
38	4412	82	7756	126	11100
39	4488	83	7832	127	11176
40	4564	84	7908	128	11252
41	4640	85	7984	129	11328
42	4716	86	8060	130	11404
43	4792	87	8136		
44	4868	88	8212		

Mean new moons of the year 1525. Golden Number 6.

The page carries a single ruled frame holding four independent panels. On the left stands the *Ordines / Anni Domini — Adde* column (20 rows); next to it the *Menses* column with the mean new moon of each month in days, hours, minutes and seconds; and to the right three *Ordines / Anni Subtrahe* panels running from 1 to 130. The row counts of the left-hand and the month panels do not correspond, so they are set out here as separate tables.

Left panel — years to be added

ORDINES	Anni Domini — Adde
1	1449
2	1373
3	1297
4	1221
5	1145
6	1069
7	993

ORDINES	Anni Domini — Adde
8	917
9	841
10	765
11	689
12	613
13	537
14	461
15	385
16	309
17	233
18	157
19	81
20	5

[Sidenote set vertically in the *Anni Domini* column: For these years the addition of time is made that corresponds to the *ordines*.]

Mean new moons of the year 1525 — Golden Number 6

Menses	D	H	M	S
I	23	10	29	43
F	21	23	13	46
M	23	11	57	49
A	22	0	41	52
M	21	13	25	55
I	20	2	9	58
I	19	14	54	1
A	18	3	38	4
S	16	16	22	7
O	16	5	6	10
N	14	17	50	13
D	14	6	34	16

[Note printed at the foot of the *Menses* panel: For the years to the right, a subtraction of time is made that corresponds to the *ordines*.]

Right-hand panels — years to be subtracted

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
1	1601	45	4945	89	8289
2	1677	46	5021	90	8365
3	1753	47	5097	91	8441
4	1829	48	5173	92	8517
5	1905	49	5249	93	8593
6	1981	50	5325	94	8669
7	2057	51	5401	95	8745
8	2133	52	5477	96	8821
9	2209	53	5553	97	8897
10	2285	54	5629	98	8973
11	2361	55	5705	99	9049
12	2437	56	5781	100	9125
13	2513	57	5857	101	9201
14	2589	58	5933	102	9277
15	2665	59	6009	103	9353
16	2741	60	6085	104	9429
17	2817	61	6161	105	9505
18	2893	62	6237	106	9581
19	2969	63	6313	107	9657
20	3045	64	6389	108	9733
21	3121	65	6465	109	9809
22	3197	66	6541	110	9885
23	3273	67	6617	111	9961
24	3349	68	6693	112	10037
25	3425	69	6769	113	10113
26	3501	70	6845	114	10189
27	3577	71	6921	115	10265

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
28	3653	72	6997	116	10341
29	3729	73	7073	117	10417
30	3805	74	7149	118	10493
31	3881	75	7225	119	10569
32	3957	76	7301	120	10645
33	4033	77	7377	121	10721
34	4109	78	7453	122	10797
35	4185	79	7529	123	10873
36	4261	80	7605	124	10949
37	4337	81	7681	125	11025
38	4413	82	7757	126	11101
39	4489	83	7833	127	11177
40	4565	84	7909	128	11253
41	4641	85	7985	129	11329
42	4717	86	8061	130	11405
43	4793	87	8137		
44	4869	88	8213		

Mean new moons of the year 1526. Golden Number 7.

Left panel — years to be added

ORDINES	Anni Domini — Adde
1	1450
2	1374
3	1298
4	1222
5	1146
6	1070
7	994
8	918
9	842

ORDINES	Anni Domini — Adde
10	766
11	690
12	614
13	538
14	462
15	386
16	310
17	234
18	158
19	82
20	6

[Sidenote set vertically in the *Anni Domini* column: For these years the addition of time is made that corresponds to the *ordines*.]

Mean new moons of the year 1526 — Golden Number 7

Menses	D	H	M	S
I	12	19	18	21
F	11	8	2	24
M	12	20	46	27
A	11	9	30	30
M	10	22	14	33
I	9	10	58	36
I	8	23	42	39
A	7	12	26	42
S	6	1	10	45
O	5	13	54	48
N	4	2	38	51
D	3	15	22	54

[Note printed at the foot of the *Menses* panel: For the years to the right, a subtraction of time is made that corresponds to the *ordines*.]

Right-hand panels — years to be subtracted

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
1	1602	45	4946	89	8290
2	1678	46	5022	90	8366
3	1754	47	5098	91	8442
4	1830	48	5174	92	8518
5	1906	49	5250	93	8594
6	1982	50	5326	94	8670
7	2058	51	5402	95	8746
8	2134	52	5478	96	8822
9	2210	53	5554	97	8898
10	2286	54	5630	98	8974
11	2362	55	5706	99	9050
12	2438	56	5782	100	9126
13	2514	57	5858	101	9202
14	2590	58	5934	102	9278
15	2666	59	6010	103	9354
16	2742	60	6086	104	9430
17	2818	61	6162	105	9506
18	2894	62	6238	106	9582
19	2970	63	6314	107	9658
20	3046	64	6390	108	9734
21	3122	65	6466	109	9810
22	3198	66	6542	110	9886
23	3274	67	6618	111	9962
24	3350	68	6694	112	10038
25	3426	69	6770	113	10114
26	3502	70	6846	114	10190
27	3578	71	6922	115	10266
28	3654	72	6998	116	10342
29	3730	73	7074	117	10418
30	3806	74	7150	118	10494

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
31	3882	75	7226	119	10570
32	3958	76	7302	120	10646
33	4034	77	7378	121	10722
34	4110	78	7454	122	10798
35	4186	79	7530	123	10874
36	4262	80	7606	124	10950
37	4338	81	7682	125	11026
38	4414	82	7758	126	11102
39	4490	83	7834	127	11178
40	4566	84	7910	128	11254
41	4642	85	7986	129	11330
42	4718	86	8062	130	11406
43	4794	87	8138		
44	4870	88	8214		

Mean new moons of the year 1527. Golden Number 8.

Left panel — years to be added

ORDINES	Anni Domini — Adde
1	1451
2	1375
3	1299
4	1223
5	1147
6	1071
7	995
8	919
9	843
10	767
11	691
12	615

ORDINES	Anni Domini — Adde
13	539
14	463
15	387
16	311
17	235
18	159
19	83
20	7

[Sidenote set vertically in the *Anni Domini* column: For these years the addition of time is made that corresponds to the *ordines*.]

Mean new moons of the year 1527 — Golden Number 8

1527 is an embolismic year: it carries thirteen mean lunations. January and March each hold two, and each of those two months is set with a brace tying its pair of lunations to one month initial; February has no entry of its own.

Menses	D	H	M	S
I (first of the braced pair)	2	4	6	59
I (second of the braced pair)	31	16	51	2
M (first of the braced pair)	2	5	35	5
M (second of the braced pair)	31	18	19	8
A	30	7	3	11
M	29	19	47	14
I	28	8	31	17
I	27	21	15	20
A	26	9	59	23
S	24	22	43	26
O	24	11	27	29
N	23	0	11	32
D	22	12	55	35

[Note printed at the foot of the *Menses* panel: For the years to the right, a subtraction of time is made that corresponds to the *ordines*.]

Right-hand panels — years to be subtracted

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
1	1603	45	4947	89	8291
2	1679	46	5023	90	8367
3	1755	47	5099	91	8443
4	1831	48	5175	92	8519
5	1907	49	5251	93	8595
6	1983	50	5327	94	8671
7	2059	51	5403	95	8747
8	2135	52	5479	96	8823
9	2211	53	5555	97	8899
10	2287	54	5631	98	8975
11	2363	55	5707	99	9051
12	2439	56	5783	100	9127
13	2515	57	5859	101	9203
14	2591	58	5935	102	9279
15	2667	59	6011	103	9355
16	2743	60	6087	104	9431
17	2819	61	6163	105	9507
18	2895	62	6239	106	9583
19	2971	63	6315	107	9659
20	3047	64	6391	108	9735
21	3123	65	6467	109	9811
22	3199	66	6543	110	9887
23	3275	67	6619	111	9963
24	3351	68	6695	112	10039
25	3427	69	6771	113	10115
26	3503	70	6847	114	10191
27	3579	71	6923	115	10267
28	3655	72	6999	116	10343
29	3731	73	7075	117	10419

Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe	Ordine s	Anni Subtrahe
30	3807	74	7151	118	10495
31	3883	75	7227	119	10571
32	3959	76	7303	120	10647
33	4035	77	7379	121	10723
34	4111	78	7455	122	10799
35	4187	79	7531	123	10875
36	4263	80	7607	124	10951
37	4339	81	7683	125	11027
38	4415	82	7759	126	11103
39	4491	83	7835	127	11179
40	4567	84	7911	128	11255
41	4643	85	7987	129	11331
42	4719	86	8063	130	11407
43	4795	87	8139		
44	4871	88	8215		

Mean new moons of the year 1528 [*Nouilunia media anni 1528*] — Golden Number [*Aur. Num.*] 9.

The page carries one table only, set as five panels across the width: the *Ordines / Anni Domini* addition panel, the *Menses* panel with the mean new moons in days, hours, minutes and seconds, and three *Ordines / Anni Subtrahe* panels.

Panel 1 — Ordines and years to be added

ORDINES	Anni Domini — Adde
1	1452
2	1376
3	1300
4	1224
5	1148
6	1072
7	996

ORDINES	Anni Domini — Adde
8	920
9	844
10	768
11	692
12	616
13	540
14	464
15	388
16	312
17	236
18	160
19	84
20	8

Foot of the panel, set vertically: "*Pro hisce annis fit additio temporis, quod ordinibus respondet.*" — For these years the addition of time is made which corresponds to the rows.

Panel 2 — Months and mean new moons (Golden Number 9)

Menses	D	H	M	S
I	21	1	39	41
F	19	14	23	44
M	20	3	7	47
A	18	15	51	50
M	18	4	35	53
I	16	17	19	56
I	15	6	3	59
A	14	18	48	2
S	13	7	32	5
O	12	20	16	8
N	11	9	0	11
D	10	21	44	14

Foot of the panel: "*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*" — For the years to the right the subtraction of time is made which corresponds to the rows.

Panels 3–5 — Ordines and years to be subtracted

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1604	45	4948	89	8292
2	1680	46	5024	90	8368
3	1756	47	5100	91	8444
4	1832	48	5176	92	8520
5	1908	49	5252	93	8596
6	1984	50	5328	94	8672
7	2060	51	5404	95	8748
8	2136	52	5480	96	8824
9	2212	53	5556	97	8900
10	2288	54	5632	98	8976
11	2364	55	5708	99	9052
12	2440	56	5784	100	9128
13	2516	57	5860	101	9204
14	2592	58	5936	102	9280
15	2668	59	6012	103	9356
16	2744	60	6088	104	9432
17	2820	61	6164	105	9508
18	2896	62	6240	106	9584
19	2972	63	6316	107	9660
20	3048	64	6392	108	9736
21	3124	65	6468	109	9812
22	3200	66	6544	110	9888
23	3276	67	6620	111	9964
24	3352	68	6696	112	10040
25	3428	69	6772	113	10116
26	3504	70	6848	114	10192

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
27	3580	71	6924	115	10268
28	3656	72	7000	116	10344
29	3732	73	7076	117	10420
30	3808	74	7152	118	10496
31	3884	75	7228	119	10572
32	3960	76	7304	120	10648
33	4036	77	7380	121	10724
34	4112	78	7456	122	10800
35	4188	79	7532	123	10876
36	4264	80	7608	124	10952
37	4340	81	7684	125	11028
38	4416	82	7760	126	11104
39	4492	83	7836	127	11180
40	4568	84	7912	128	11256
41	4644	85	7988	129	11332
42	4720	86	8064	130	11408
43	4796	87	8140		
44	4872	88	8216		

Mean new moons of the year 1529 [*Nouilunia media anni 1529*] — Golden Number [*Aur. Num.*] 10.

Panel 1 — Ordines and years to be added

ORDINES	Anni Domini — Adde
1	1453
2	1377
3	1301
4	1225
5	1149
6	1073
7	997

ORDINES	Anni Domini — Adde
8	921
9	845
10	769
11	693
12	617
13	541
14	465
15	389
16	313
17	237
18	161
19	85
20	9

Foot of the panel, set vertically: "*Pro hisce annis fit additio temporis, quod ordinibus respondet.*" — For these years the addition of time is made which corresponds to the rows.

Panel 2 — Months and mean new moons (Golden Number 10)

Menses	D	H	M	S
I	9	10	28	18
F	7	23	12	21
M	9	11	56	24
A	8	0	40	27
M	7	13	24	30
I	6	2	8	33
I	5	14	52	36
A	4	3	36	39
S	2	16	20	42
O (braced, first line)	2	5	4	45
O (braced, second line)	31	17	48	48
N	30	6	32	51

Menses	D	H	M	S
D	29	19	16	54

The October slot is braced over two lunation lines, so the panel carries thirteen value lines against twelve month slots.

Foot of the panel: "*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*" — For the years to the right the subtraction of time is made which corresponds to the rows.

Panels 3–5 — Ordines and years to be subtracted

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1605	45	4949	89	8293
2	1681	46	5025	90	8369
3	1757	47	5101	91	8445
4	1833	48	5177	92	8521
5	1909	49	5253	93	8597
6	1985	50	5329	94	8673
7	2061	51	5405	95	8749
8	2137	52	5481	96	8825
9	2213	53	5557	97	8901
10	2289	54	5633	98	8977
11	2365	55	5709	99	9053
12	2441	56	5785	100	9129
13	2517	57	5861	101	9205
14	2593	58	5937	102	9281
15	2669	59	6013	103	9357
16	2745	60	6089	104	9433
17	2821	61	6165	105	9509
18	2897	62	6241	106	9585
19	2973	63	6317	107	9661
20	3049	64	6393	108	9737
21	3125	65	6469	109	9813

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
22	3201	66	6545	110	9889
23	3277	67	6621	111	9965
24	3353	68	6697	112	10041
25	3429	69	6773	113	10117
26	3505	70	6849	114	10193
27	3581	71	6925	115	10269
28	3657	72	7001	116	10345
29	3733	73	7077	117	10421
30	3809	74	7153	118	10497
31	3885	75	7229	119	10573
32	3961	76	7305	120	10649
33	4037	77	7381	121	10725
34	4113	78	7457	122	10801
35	4189	79	7533	123	10877
36	4265	80	7609	124	10953
37	4341	81	7685	125	11029
38	4417	82	7761	126	11105
39	4493	83	7837	127	11181
40	4569	84	7913	128	11257
41	4645	85	7989	129	11333
42	4721	86	8065	130	11409
43	4797	87	8141		
44	4873	88	8217		

Mean new moons of the year 1530 [*Nouilunia media anni 1530*] — Golden Number [*Aur. Num.*] 11.

Panel 1 — Ordines and years to be added

ORDINES	Anni Domini — Adde
1	1454
2	1378

ORDINES	Anni Domini — Adde
3	1302
4	1226
5	1150
6	1074
7	998
8	922
9	846
10	770
11	694
12	618
13	542
14	466
15	390
16	314
17	238
18	162
19	86
20	10

Foot of the panel, set vertically: "*Pro hisce annis fit additio temporis, quod ordinibus respondet.*" — For these years the addition of time is made which corresponds to the rows.

Panel 2 — Months and mean new moons (Golden Number 11)

Menses	D	H	M	S
I	28	8	1	0
F	26	20	45	3
M	28	9	29	6
A	26	22	13	9
M	26	10	57	12
I	24	23	41	15
I	24	12	25	18

Menses	D	H	M	S
A	23	1	9	21
S	21	13	53	24
O	21	2	37	27
N	19	15	21	30
D	19	4	5	35

Foot of the panel: "*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*" — For the years to the right the subtraction of time is made which corresponds to the rows.

Panels 3–5 — Ordines and years to be subtracted

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1606	45	4950	89	8294
2	1682	46	5026	90	8370
3	1758	47	5102	91	8446
4	1834	48	5178	92	8522
5	1910	49	5254	93	8598
6	1986	50	5330	94	8674
7	2062	51	5406	95	8750
8	2138	52	5482	96	8826
9	2214	53	5558	97	8902
10	2290	54	5634	98	8978
11	2366	55	5710	99	9054
12	2442	56	5786	100	9130
13	2518	57	5862	101	9206
14	2594	58	5938	102	9282
15	2670	59	6014	103	9358
16	2746	60	6090	104	9434
17	2822	61	6166	105	9510
18	2898	62	6242	106	9586
19	2974	63	6318	107	9662
20	3050	64	6394	108	9738

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
21	3126	65	6470	109	9814
22	3202	66	6546	110	9890
23	3278	67	6622	111	9966
24	3354	68	6698	112	10042
25	3430	69	6774	113	10118
26	3506	70	6850	114	10194
27	3582	71	6926	115	10270
28	3658	72	7002	116	10346
29	3734	73	7078	117	10422
30	3810	74	7154	118	10498
31	3886	75	7230	119	10574
32	3962	76	7306	120	10650
33	4038	77	7382	121	10726
34	4114	78	7458	122	10802
35	4190	79	7534	123	10878
36	4266	80	7610	124	10954
37	4342	81	7686	125	11030
38	4418	82	7762	126	11106
39	4494	83	7838	127	11182
40	4570	84	7914	128	11258
41	4646	85	7990	129	11334
42	4722	86	8066	130	11410
43	4798	87	8142		
44	4874	88	8218		

Mean new moons for the year 1531 — Golden Number 12

Table. The frame is headed vertically at the left ORDINES. Within it stand two independent sub-tables side by side — at the left the Anni Domini | Adde addition table (rows 1–20), at the right the Menses | D H M S table of mean new moons —

followed by three panels of Ordines | Anni Subtrahe. running 1–44, 45–88, 89–130.

Years of the Lord — Add [Anni Domini — Adde]

Ordo	Adde
1	1455
2	1379
3	1303
4	1227
5	1151
6	1075
7	999
8	923
9	847
10	771
11	695
12	619
13	543
14	467
15	391
16	315
17	239
18	163
19	87
20	11

[Margin, set vertically beside this column: For these years an addition of time is made, corresponding to the rows.] — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*

Mean new moons of the year 1531. Golden Number 12. [Nouilunia media anni 1531. Aur. Num. 12.]

Mensis	D	H	M	S
I	17	16	49	38

Mensis	D	H	M	S
F	16	5	33	41
M	17	18	17	44
A	16	7	1	47
M	15	19	45	50
I	14	8	29	53
I	13	21	13	56
A	12	9	57	59
S	10	22	42	2
O	10	11	26	5
N	9	0	10	8
D	8	12	54	11

[Below this column, within the frame: For the years to the right a subtraction of time is made, corresponding to the rows.] — *Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*

Rows | Years — Subtract [Ordines | Anni Subtrahe.] — three panels across the page

Ordines	Anni Subtrahe.	Ordines	Anni Subtrahe.	Ordines	Anni Subtrahe.
1	1607	45	4951	89	8295
2	1683	46	5027	90	8371
3	1759	47	5103	91	8447
4	1835	48	5179	92	8523
5	1911	49	5255	93	8599
6	1987	50	5331	94	8675
7	2063	51	5407	95	8751
8	2139	52	5483	96	8827
9	2215	53	5559	97	8903
10	2291	54	5635	98	8979
11	2367	55	5711	99	9055
12	2443	56	5787	100	9131
13	2519	57	5863	101	9207

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
14	2595	58	5939	102	9283
15	2671	59	6015	103	9359
16	2747	60	6091	104	9435
17	2823	61	6167	105	9511
18	2899	62	6243	106	9587
19	2975	63	6319	107	9663
20	3051	64	6395	108	9739
21	3127	65	6471	109	9815
22	3203	66	6547	110	9891
23	3279	67	6623	111	9967
24	3355	68	6699	112	10043
25	3431	69	6775	113	10119
26	3507	70	6851	114	10195
27	3583	71	6927	115	10271
28	3659	72	7003	116	10347
29	3735	73	7079	117	10423
30	3811	74	7155	118	10499
31	3887	75	7231	119	10575
32	3963	76	7307	120	10651
33	4039	77	7383	121	10727
34	4115	78	7459	122	10803
35	4191	79	7535	123	10879
36	4267	80	7611	124	10955
37	4343	81	7687	125	11031
38	4419	82	7763	126	11107
39	4495	83	7839	127	11183
40	4571	84	7915	128	11259
41	4647	85	7991	129	11335
42	4723	86	8067	130	11411
43	4799	87	8143		

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
44	4875	88	8219		

Mean new moons for the year 1532 — Golden Number 13

Table. Same layout as the preceding page.

Years of the Lord — Add [Anni Domini — Adde]

Ordo	Adde
1	1456
2	1380
3	1304
4	1228
5	1152
6	1076
7	1000
8	924
9	848
10	772
11	696
12	620
13	544
14	468
15	392
16	316
17	240
18	164
19	88
20	12

[Margin, set vertically beside this column: For these years an addition of time is made, corresponding to the rows.] — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*

Mean new moons of the year 1532. Golden Number 13. [Nouilunia media anni 1532. Aur. Num. 13.]

Mensis	D	H	M	S
I	7	1	38	16
F	5	14	22	19
M	6	3	6	22
A	4	15	50	25
M	4	4	34	28
I	2	17	18	31
I	2	6	2	34
I	31	18	46	37
A	30	7	30	40
S	28	20	14	43
O	28	8	58	46
N	26	21	42	49
D	26	10	26	52

An embolismic year: the second I (July) carries two new moons, printed as a single I with a brace embracing the two rows 2 6 2 34 and 31 18 46 37.

[Below this column, within the frame: For the years to the right a subtraction of time is made, corresponding to the rows.] — *Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*

Rows | Years — Subtract [Ordines | Anni Subtrahe.] — three panels across the page

Ordine	Anni Subtrahe.	Ordine	Anni Subtrahe.	Ordine	Anni Subtrahe.
s		s		s	
1	1608	45	4952	89	8296
2	1684	46	5028	90	8372
3	1760	47	5104	91	8448
4	1836	48	5180	92	8524
5	1912	49	5256	93	8600
6	1988	50	5332	94	8676
7	2064	51	5408	95	8752

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
8	2140	52	5484	96	8828
9	2216	53	5560	97	8904
10	2292	54	5636	98	8980
11	2368	55	5712	99	9056
12	2444	56	5788	100	9132
13	2520	57	5864	101	9208
14	2596	58	5940	102	9284
15	2672	59	6016	103	9360
16	2748	60	6092	104	9436
17	2824	61	6168	105	9512
18	2900	62	6244	106	9588
19	2976	63	6320	107	9664
20	3052	64	6396	108	9740
21	3128	65	6472	109	9816
22	3204	66	6548	110	9892
23	3280	67	6624	111	9968
24	3356	68	6700	112	10044
25	3432	69	6776	113	10120
26	3508	70	6852	114	10196
27	3584	71	6928	115	10272
28	3660	72	7004	116	10348
29	3736	73	7080	117	10424
30	3812	74	7156	118	10500
31	3888	75	7232	119	10576
32	3964	76	7308	120	10652
33	4040	77	7384	121	10728
34	4116	78	7460	122	10804
35	4192	79	7536	123	10880
36	4268	80	7612	124	10956

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
37	4344	81	7688	125	11032
38	4420	82	7764	126	11108
39	4496	83	7840	127	11184
40	4572	84	7916	128	11260
41	4648	85	7992	129	11336
42	4724	86	8068 [?]	130	11412
43	4800	87	8144		
44	4876	88	8220		

Mean new moons for the year 1533 — Golden Number 14

Table. Same layout as the two preceding pages.

Years of the Lord — Add [Anni Domini — Adde]

Ordo	Adde
1	1457
2	1381
3	1305
4	1229
5	1153
6	1077
7	1001
8	925
9	849
10	773
11	697
12	621
13	545
14	469
15	393
16	317
17	241

Ordo	Adde
18	165
19	89
20	13

[Margin, set vertically beside this column: For these years an addition of time is made, corresponding to the rows.] — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*

Mean new moons of the year 1533. Golden Number 14. [Nouilunia media anni 1533. Aur. Num. 14.]

Mensis	D	H	M	S
I	24	23	10	58
F	23	11	55	1
M	25	0	39	4
A	23	13	23	7
M	23	2	7	10
I	21	14	51	13
I	21	3	35	16
A	19	16	19	19
S	18	5	3	22
O	17	17	47	25
N	16	6	31	28
D	15	19	15	31

[Below this column, within the frame: For the years to the right a subtraction of time is made, corresponding to the rows.] — *Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*

Rows | Years — Subtract [Ordines | Anni Subtrahe.] — three panels across the page

Ordine	Anni Subtrahe.	Ordine	Anni Subtrahe.	Ordine	Anni Subtrahe.
s		s		s	
1	1609	45	4953	89	8297
2	1685	46	5029	90	8373

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
3	1761	47	5105	91	8449
4	1837	48	5181	92	8525
5	1913	49	5257	93	8601
6	1989	50	5333	94	8677
7	2065	51	5409	95	8753
8	2141	52	5485	96	8829
9	2217	53	5561	97	8905
10	2293	54	5637	98	8981
11	2369	55	5713	99	9057
12	2445	56	5789	100	9133
13	2521	57	5865	101	9209
14	2597	58	5941	102	9285
15	2673	59	6017	103	9361
16	2749	60	6093	104	9437
17	2825	61	6169	105	9513
18	2901	62	6245	106	9589
19	2977	63	6321	107	9665
20	3053	64	6397	108	9741
21	3129	65	6473	109	9817
22	3205	66	6549	110	9893
23	3281	67	6625	111	9969
24	3357	68	6701	112	10045
25	3433	69	6777	113	10121
26	3509	70	6853	114	10197
27	3585	71	6929	115	10273
28	3661	72	7005	116	10349
29	3737	73	7081	117	10425
30	3813	74	7157	118	10501
31	3889	75	7233	119	10577
32	3965	76	7309	120	10653

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
33	4041	77	7385	121	10729
34	4117	78	7461	122	10805
35	4193	79	7537	123	10881
36	4269	80	7613	124	10957
37	4345	81	7689	125	11033
38	4421	82	7765	126	11109
39	4497	83	7841	127	11185
40	4573	84	7917	128	11261
41	4649	85	7993	129	11337
42	4725	86	8069	130	11413
43	4801	87	8145		
44	4877	88	8221		

Mean new moons of the year 1534 — Golden Number 15

Nouilunia media anni 1534. Aur.Num. 15.

Additive year-table (ORDINES / Anni Domini — Adde).

Ordines	Adde
1	1458
2	1382
3	1306
4	1230
5	1154
6	1078
7	1002
8	926
9	850
10	774
11	698
12	622
13	546

Ordines	Adde
14	470
15	394
16	318
17	242
18	166
19	90
20	14

[Margin: vertical rubric set beside the Anni Domini column — "Pro hisce annis fit additio temporis, quod ordinibus respondet." ("For these years an addition of time is made, corresponding to the *ordines*.")]

New-moon table (Menses — D H M S). The month-letter column and the Adde column above share the same frame but are not row-aligned.

Menses	D	H	M	S
I	14	7	59	35
F	12	20	43	38
M	14	9	27	41
A	12	22	11	44
M	12	10	55	47
I	10	23	39	50
I	10	12	23	53
A	9	1	7	56
S	7	13	51	59
O	7	2	36	2
N	5	15	20	5
D	5	4	4	8

[Margin: note printed at the foot of the Nouilunia column — "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." ("For the years to the right a subtraction of time is made, corresponding to the *ordines*.")]

Subtractive year-panels (Ordines / Anni Subtrahe.), three panels across the page.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1610	45	4954	89	8298
2	1686	46	5030	90	8374
3	1762	47	5106	91	8450
4	1838	48	5182	92	8526
5	1914	49	5258	93	8602
6	1990	50	5334	94	8678
7	2066	51	5410	95	8754
8	2142	52	5486	96	8830
9	2218	53	5562	97	8906
10	2294	54	5638	98	8982
11	2370	55	5714	99	9058
12	2446	56	5790	100	9134
13	2522	57	5866	101	9210
14	2598	58	5942	102	9286
15	2674	59	6018	103	9362
16	2750	60	6094	104	9438
17	2826	61	6170	105	9514
18	2902	62	6246	106	9590
19	2978	63	6322	107	9666
20	3054	64	6398	108	9742
21	3130	65	6474	109	9818
22	3206	66	6550	110	9894
23	3282	67	6626	111	9970
24	3358	68	6702	112	10046
25	3434	69	6778	113	10122
26	3510	70	6854	114	10198
27	3586	71	6930	115	10274
28	3662	72	7006	116	10350
29	3738	73	7082	117	10426
30	3814	74	7158	118	10502

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3890	75	7234	119	10578
32	3966	76	7310	120	10654
33	4042	77	7386	121	10730
34	4118	78	7462	122	10806
35	4194	79	7538	123	10882
36	4270	80	7614	124	10958
37	4346	81	7690	125	11034
38	4422	82	7766	126	11110
39	4498	83	7842	127	11186
40	4574	84	7918	128	11262
41	4650	85	7994	129	11338
42	4726	86	8070	130	11414
43	4802	87	8146		
44	4878	88	8222		

Mean new moons of the year 1535 — Golden Number 16

Nouilunia media anni 1535. Aur. num. 16.

Additive year-table (ORDINES / Anni Domini — Adde).

Ordines	Adde
1	1459
2	1383
3	1307
4	1231
5	1155
6	1079
7	1003
8	927
9	851
10	775
11	699

Ordines	Adde
12	623
13	547
14	471
15	395
16	319
17	243
18	167
19	91
20	15

[Margin: vertical rubric — "Pro hisce annis fit additio temporis, quod ordinibus respondet." ("For these years an addition of time is made, corresponding to the *ordines*.")]

New-moon table (Menses — D H M S). This is an embolismic year: a printed brace { in the source joins two lunations to the single month-letter M (May).

Menses	D	H	M	S
I	3	16	48	13
F	2	5	32	16
M	3	18	16	19
A	2	7	0	22
M (<i>braced, 1st</i>)	1	19	44	25
M (<i>braced, 2nd</i>)	31	8	28	28
I	29	21	12	31
I	29	9	56	34
A	27	22	40	37
S	26	11	24	40
O	26	0	8	43
N	24	12	52	46
D	24	1	36	49

[Margin: note at the foot of the Nouilunia column — "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." ("For the years to the right a subtraction of time is made, corresponding to the *ordines*.")]

Subtractive year-panels (Ordines / Anni Subtrahe.), three panels across the page.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1611	45	4955	89	8299
2	1687	46	5031	90	8375
3	1763	47	5107	91	8451
4	1839	48	5183	92	8527
5	1915	49	5259	93	8603
6	1991	50	5335	94	8679
7	2067	51	5411	95	8755
8	2143	52	5487	96	8831
9	2219	53	5563	97	8907
10	2295	54	5639	98	8983
11	2371	55	5715	99	9059
12	2447	56	5791	100	9135
13	2523	57	5867	101	9211
14	2599	58	5943	102	9287
15	2675	59	6019	103	9363
16	2751	60	6095	104	9439
17	2827	61	6171	105	9515
18	2903	62	6247	106	9591
19	2979	63	6323	107	9667
20	3055	64	6399	108	9743
21	3131	65	6475	109	9819
22	3207	66	6551	110	9895
23	3283	67	6627	111	9971
24	3359	68	6703	112	10047
25	3435	69	6779	113	10123
26	3511	70	6855	114	10199
27	3587	71	6931	115	10275
28	3663	72	7007	116	10351

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
29	3739	73	7083	117	10427
30	3815	74	7159	118	10503
31	3891	75	7235	119	10579
32	3967	76	7311	120	10655
33	4043	77	7387	121	10731
34	4119	78	7463	122	10807
35	4195	79	7539	123	10883
36	4271	80	7615	124	10959
37	4347	81	7691	125	11035
38	4423	82	7767	126	11111
39	4499	83	7843	127	11187
40	4575	84	7919	128	11263
41	4651	85	7995	129	11339
42	4727	86	8071	130	11415
43	4803	87	8147		
44	4879	88	8223		

Mean new moons of the year 1536 — Golden Number 17

Nouilunia media anni 1536. Aur. num. 17.

Additive year-table (ORDINES / Anni Domini — Adde).

Ordines	Adde
1	1460
2	1384
3	1308
4	1232
5	1156
6	1080
7	1004
8	928
9	852

Ordines	Adde
10	776
11	700
12	624
13	548
14	472
15	396
16	320
17	244
18	168
19	92
20	16

[Margin: vertical rubric — "Pro hisce annis fit additio temporis, quod ordinibus respondet." ("For these years an addition of time is made, corresponding to the *ordines*.")]

New-moon table (Menses — D H M S).

Menses	D	H	M	S
I	22	14	20	55
F	21	3	4	58
M	21	15	49	1
A	20	4	33	4
M	19	17	17	7
I	18	6	1	10
I	17	18	45	13
A	16	7	29	16
S	14	20	13	19
O	14	8	57	22
N	12	21	41	25
D	12	10	25	28

A further ruled row is drawn below December in the source; it is blank (the frame is set for a thirteenth lunation, as on the preceding page, but nothing is printed in it).

[Margin: note at the foot of the Nouilunia column — "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." ("For the years to the right a subtraction of time is made, corresponding to the *ordines*.")]

Subtractive year-panels (*Ordines* / *Anni Subtrahe.*), three panels across the page.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1612	45	4956	89	8300
2	1688	46	5032	90	8376
3	1764	47	5108	91	8452
4	1840	48	5184	92	8528
5	1916	49	5260	93	8604
6	1992	50	5336	94	8680
7	2068	51	5412	95	8756
8	2144	52	5488	96	8832
9	2220	53	5564	97	8908
10	2296	54	5640	98	8984
11	2372	55	5716	99	9060
12	2448	56	5792	100	9136
13	2524	57	5868	101	9212
14	2600	58	5944	102	9288
15	2676	59	6020	103	9364
16	2752	60	6096	104	9440
17	2828	61	6172	105	9516
18	2904	62	6248	106	9592
19	2980	63	6324	107	9668
20	3056	64	6400	108	9744
21	3132	65	6476	109	9820
22	3208	66	6552	110	9896

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
23	3284	67	6628	111	9972
24	3360	68	6704	112	10048
25	3436	69	6780	113	10124
26	3512	70	6856	114	10200
27	3588	71	6932	115	10276
28	3664	72	7008	116	10352
29	3740	73	7084	117	10421
30	3816	74	7160	118	10504
31	3892	75	7236	119	10580
32	3968	76	7312	120	10656
33	4044	77	7388	121	10732
34	4120	78	7464	122	10808
35	4196	79	7540	123	10884
36	4272	80	7616	124	10960
37	4348	81	7692	125	11036
38	4424	82	7768	126	11112
39	4500	83	7844	127	11188
40	4576	84	7920	128	11264
41	4652	85	7996	129	11340
42	4728	86	8072	130	11416
43	4804	87	8148		
44	4880	88	8224		

Mean new moons of the year 1537. [Nouilunia media anni 1537.]

Golden Number 18. [Aur. num. 18.]

ORDINES	Anni Domini — Adde
1	1461
2	1385
3	1309
4	1233

ORDINES	Anni Domini — Adde
5	1157
6	1081
7	1005
8	929
9	853
10	777
11	701
12	625
13	549
14	473
15	397
16	321
17	245
18	169
19	93
20	17

[Margin, running vertically beside the *Anni Domini* column: For these years an addition of time is made, corresponding to the rows.] [Pro hisce annis fit additio temporis, quod ordinibus respondet.]

Menses	D	H	M	S
I	10	23	9	33
F	9	11	53	36
M	11	0	37	39
A	9	13	21	42
M	9	2	5	45
I	7	14	49	48
I	7	3	33	51
A	5	16	17	54
S	4	5	1	57
O	3	17	46	0
N	2	6	30	3

Menses	D	H	M	S
D {	1	19	14	6
D {	31	7	58	9

[Note printed below the *Menses* / D H M S panel: For the years to the right a subtraction of time is made, corresponding to the rows.] [Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1613	45	4957	89	8301
2	1689	46	5033	90	8377
3	1765	47	5109	91	8453
4	1841	48	5185	92	8529
5	1917	49	5261	93	8605
6	1993	50	5337	94	8681
7	2069	51	5413	95	8757
8	2145	52	5489	96	8833
9	2221	53	5565	97	8909
10	2297	54	5641	98	8985
11	2373	55	5717	99	9061
12	2449	56	5793	100	9137
13	2525	57	5869	101	9213
14	2601	58	5945	102	9289
15	2677	59	6021	103	9365
16	2753	60	6097	104	9441
17	2829	61	6173	105	9517
18	2905	62	6249	106	9593
19	2981	63	6325	107	9669
20	3057	64	6401	108	9745
21	3133	65	6477	109	9821
22	3209	66	6553	110	9897
23	3285	67	6629	111	9973
24	3361	68	6705	112	10049

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
25	3437	69	6781	113	10125
26	3513	70	6857	114	10201
27	3589	71	6933	115	10277
28	3665	72	7009	116	10353
29	3741	73	7085	117	10429
30	3817	74	7161	118	10505
31	3893	75	7237	119	10581
32	3969	76	7313	120	10657
33	4045	77	7389	121	10733
34	4121	78	7465	122	10809
35	4197	79	7541	123	10885
36	4273	80	7617	124	10961
37	4349	81	7693	125	11037
38	4425	82	7769	126	11113
39	4501	83	7845	127	11189
40	4577	84	7921	128	11265
41	4653	85	7997	129	11341
42	4729	86	8073	130	11417
43	4805	87	8149		
44	4881	88	8225		

Mean new moons of the year 1538. [Nouilunia media anni 1538.]

Golden Number 19. [Aur. num. 19.]

ORDINES	Anni Domini — Adde
1	1462
2	1386
3	1310
4	1234
5	1158
6	1082

ORDINES	Anni Domini — Adde
7	1006
8	930
9	854
10	778
11	702
12	626
13	550
14	474
15	398
16	322
17	246
18	170
19	94
20	18

[Margin, running vertically beside the *Anni Domini* column: For these years an addition of time is made, corresponding to the rows.] [Pro hisce annis fit additio temporis, quod ordinibus respondet.]

Menses	D	H	M	S
I	29	20	42	14
F	28	9	26	17
M	29	22	10	20
A	28	10	54	23
M	27	23	38	26
I	26	12	22	29
I	26	1	6	32
A	24	13	50	35
S	23	2	34	38
O	22	15	18	41
N	21	4	2	44
D	20	16	46	47

[Note printed below the *Menses* / D H M S panel: For the years to the right a subtraction of time is made, corresponding to the rows.] [Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1614	45	4958	89	8302
2	1690	46	5034	90	8378
3	1766	47	5110	91	8454
4	1842	48	5186	92	8530
5	1918	49	5262	93	8606
6	1994	50	5338	94	8682
7	2070	51	5414	95	8758
8	2146	52	5490	96	8834
9	2222	53	5566	97	8910
10	2298	54	5642	98	8986
11	2374	55	5718	99	9062
12	2450	56	5794	100	9138
13	2526	57	5870	101	9214
14	2602	58	5946	102	9290
15	2678	59	6022	103	9366
16	2754	60	6098	104	9442
17	2830	61	6174	105	9518
18	2906	62	6250	106	9594
19	2982	63	6326	107	9670
20	3058	64	6402	108	9746
21	3134	65	6478	109	9822
22	3210	66	6554	110	9898
23	3286	67	6630	111	9974
24	3362	68	6706	112	10050
25	3438	69	6782	113	10126
26	3514	70	6858	114	10202
27	3590	71	6934	115	10278

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
28	3666	72	7010	116	10354
29	3742	73	7086	117	10430
30	3818	74	7162	118	10506
31	3894	75	7238	119	10582
32	3970	76	7314	120	10658
33	4046	77	7390	121	10734
34	4122	78	7466	122	10810
35	4198	79	7542	123	10886
36	4274	80	7618	124	10962
37	4350	81	7694	125	11038
38	4426	82	7770	126	11114
39	4502	83	7846	127	11190
40	4578	84	7922	128	11266
41	4654	85	7998	129	11342
42	4730	86	8074	130	11418
43	4806	87	8150		
44	4882	88	8226		

Mean new moons of the year 1539. [Nouilunia media anni 1539.]

Golden Number 1. [Aur. num. 1.]

ORDINES	Anni Domini — Adde
1	1463
2	1387
3	1311
4	1235
5	1159
6	1083
7	1007
8	931
9	855

ORDINES	Anni Domini — Adde
10	779
11	703
12	627
13	551
14	475
15	399
16	323
17	247
18	171
19	95
20	19

[Margin, running vertically beside the *Anni Domini* column: For these years an addition of time is made, corresponding to the rows.] [Pro hisce annis fit additio temporis, quod ordinibus respondet.]

Menses	D	H	M	S
I	19	5	30	53
F	17	18	14	56
M	19	6	58	59
A	17	19	43	2
M	17	8	27	5
I	15	21	11	8
I	15	9	55	11
A	13	22	39	14
S	12	11	23	17
O	12	0	7	20
N	10	12	51	23
D	10	1	35	26

[Note printed below the *Menses* / D H M S panel: For the years to the right a subtraction of time is made, corresponding to the rows.] [Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1615	45	4959	89	8303
2	1691	46	5035	90	8379
3	1767	47	5111	91	8455
4	1843	48	5187	92	8531
5	1919	49	5263	93	8607
6	1995	50	5339	94	8683
7	2071	51	5415	95	8759
8	2147	52	5491	96	8835
9	2223	53	5567	97	8911
10	2299	54	5643	98	8987
11	2375	55	5719	99	9063
12	2451	56	5795	100	9139
13	2527	57	5871	101	9215
14	2603	58	5947	102	9291
15	2679	59	6023	103	9367
16	2755	60	6099	104	9443
17	2831	61	6175	105	9519
18	2907	62	6251	106	9595
19	2983	63	6327	107	9671
20	3059	64	6403	108	9747
21	3135	65	6479	109	9823
22	3211	66	6555	110	9899
23	3287	67	6631	111	9975
24	3363	68	6707	112	10051
25	3439	69	6783	113	10127
26	3515	70	6859	114	10203
27	3591	71	6935	115	10279
28	3667	72	7011	116	10355
29	3743	73	7087	117	10431
30	3819	74	7163	118	10507

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3895	75	7239	119	10583
32	3971	76	7315	120	10659
33	4047	77	7391	121	10735
34	4123	78	7467	122	10811
35	4199	79	7543	123	10887
36	4275	80	7619	124	10963
37	4351	81	7695	125	11039
38	4427	82	7771	126	11115
39	4503	83	7847	127	11191
40	4579	84	7923	128	11267
41	4655	85	7999	129	11343
42	4731	86	8075	130	11419
43	4807	87	8151		
44	4883	88	8227		

Mean new moons of the year 1540 [*Nouilunia media anni 1540*] — **Golden number 2** [*Aur. num. 2*].

ORDINES [rows] — **Anni Domini. Adde** [Years of the Lord. Add]

Ordo	Adde
1	1464
2	1388
3	1312
4	1236
5	1160
6	1084
7	1008
8	932
9	856
10	780
11	704

Ordo	Adde
12	628
13	552
14	476
15	400
16	324
17	248
18	172
19	96
20	20

[Margin: (set vertically in the *Anni Domini* column, below the figures) For these years, add the amount of time that corresponds to the row numbers. — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Menses. [Months] — mean new moon, in days, hours, minutes, seconds.

Menses	D	H	M	S
I	8	14	19	30
F	7	3	3	33
M	7	15	47	36
A	6	4	31	39
M	5	17	15	42
I	4	5	59	45
I	3	18	43	48
A	2	7	27	51
A	31	20	11	54
S	30	8	55	57
O	29	21	40	0
N	28	10	24	3
D	27	23	8	6

[Note printed below the D/H/M/S block:] For the years to the right, subtract the amount of time that corresponds to the row numbers. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*

Anni Subtrahe. [Years. Subtract] — the three panels, merged left to right.

Ordo	Anni	Ordo	Anni	Ordo	Anni
1	1616	45	4960	89	8304
2	1692	46	5036	90	8380
3	1768	47	5112	91	8456
4	1844	48	5188	92	8532
5	1920	49	5264	93	8608
6	1996	50	5340	94	8684
7	2072	51	5416	95	8760
8	2148	52	5492	96	8836
9	2224	53	5568	97	8912
10	2300	54	5644	98	8988
11	2376	55	5720	99	9064
12	2452	56	5796	100	9140
13	2528	57	5872	101	9216
14	2604	58	5948	102	9292
15	2680	59	6024	103	9368
16	2756	60	6100	104	9444
17	2832	61	6176	105	9520
18	2908	62	6252	106	9596
19	2984	63	6328	107	9672
20	3060	64	6404	108	9748
21	3136	65	6480	109	9824
22	3212	66	6556	110	9900
23	3288	67	6632	111	9976
24	3364	68	6708	112	10052
25	3440	69	6784	113	10128
26	3516	70	6860	114	10204
27	3592	71	6936	115	10280
28	3668	72	7012	116	10356
29	3744	73	7088	117	10432
30	3820	74	7164	118	10508

Ordo	Anni	Ordo	Anni	Ordo	Anni
31	3896	75	7240	119	10584
32	3972	76	7316	120	10660
33	4048	77	7392	121	10736
34	4124	78	7468	122	10812
35	4200	79	7544	123	10888
36	4276	80	7620	124	10964
37	4352	81	7696	125	11040
38	4428	82	7772	126	11116
39	4504	83	7848	127	11192
40	4580	84	7924	128	11268
41	4656	85	8000	129	11344
42	4732	86	8076	130	11420
43	4808	87	8152		
44	4884	88	8228		

Mean new moons of the year 1541 [*Nouilunia media anni 1541*] — **Golden number 3** [*Aur. num. 3*].

ORDINES — Anni Domini. Adde

Ordo	Adde
1	1465
2	1389
3	1313
4	1237
5	1161
6	1185
7	1009
8	933
9	857
10	781
11	705
12	629

Ordo	Adde
13	553
14	477
15	401
16	325
17	249
18	173
19	97
20	21

[Margin: (set vertically in the *Anni Domini* column, below the figures) For these years, add the amount of time that corresponds to the row numbers. — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Menses.

Menses	D	H	M	S
I	26	11	52	12
F	25	0	36	15
M	26	13	20	18
A	25	2	4	21
M	24	14	48	24
I	23	3	32	27
I	22	16	16	30
A	21	5	0	33
S	19	17	44	36
O	19	6	28	39
N	17	19	12	42
D	17	7	56	45

[Note printed below the D/H/M/S block:] For the years to the right, subtract the amount of time that corresponds to the row numbers. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*

Anni Subtrahe. — the three panels, merged left to right.

Ordo	Anni	Ordo	Anni	Ordo	Anni
1	1617	45	4961	89	8305
2	1693	46	5037	90	8381
3	1769	47	5113	91	8457
4	1845	48	5189	92	8533
5	1921	49	5265	93	8609
6	1997	50	5341	94	8685
7	2073	51	5417	95	8761
8	2149	52	5493	96	8837
9	2225	53	5569	97	8913
10	2301	54	5645	98	8989
11	2377	55	5721	99	9065
12	2453	56	5797	100	9141
13	2529	57	5873	101	9217
14	2605	58	5949	102	9293
15	2681	59	6025	103	9369
16	2757	60	6101	104	9445
17	2833	61	6177	105	9521
18	2909	62	6253	106	9597
19	2985	63	6329	107	9673
20	3061	64	6405	108	9749
21	3137	65	6481	109	9825
22	3213	66	6557	110	9901
23	3289	67	6633	111	9977
24	3365	68	6709	112	10053
25	3441	69	6785	113	10129
26	3517	70	6861	114	10205
27	3593	71	6937	115	10281
28	3669	72	7013	116	10357
29	3745	73	7089	117	10433
30	3821	74	7165	118	10509
31	3897	75	7241	119	10585

Ordo	Anni	Ordo	Anni	Ordo	Anni
32	3973	76	7317	120	10661
33	4049	77	7393	121	10737
34	4125	78	7469	122	10813
35	4201	79	7545	123	10889
36	4277	80	7621	124	10965
37	4353	81	7697	125	11041
38	4429	82	7773	126	11117
39	4505	83	7849	127	11193
40	4581	84	7925	128	11269
41	4657	85	8001	129	11345
42	4733	86	8077	130	11421
43	4809	87	8153		
44	4885	88	8229		

Mean new moons of the year 1542 [*Nouilunia media anni 1542*] — **Golden number 4** [*Aur. num. 4*].

ORDINES — Anni Domini. Adde

Ordo	Adde
1	1466
2	1390
3	1314
4	1238
5	1162
6	1086
7	1010
8	934
9	858
10	782
11	706
12	630
13	554

Ordo	Adde
14	478
15	402
16	326
17	250
18	174
19	98
20	22

[Margin: (set vertically in the *Anni Domini* column, below the figures) For these years, add the amount of time that corresponds to the row numbers. — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Menses.

Menses	D	H	M	S
I	15	20	40	50
F	14	9	24	53
M	15	22	8	56
A	14	10	52	59
M	13	23	37	2
I	12	12	21	5
I	12	1	5	8
A	10	13	49	11
S	9	2	33	14
O	8	15	17	17
N	7	4	1	20
D	6	16	45	23

[Note printed below the D/H/M/S block:] For the years to the right, subtract the amount of time that corresponds to the row numbers. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*

Anni Subtrahe. — the three panels, merged left to right.

Ordo	Anni	Ordo	Anni	Ordo	Anni
1	1618	45	4962	89	8306

Ordo	Anni	Ordo	Anni	Ordo	Anni
2	1694	46	5038	90	8382
3	1770	47	5114	91	8458
4	1846	48	5190	92	8534
5	1922	49	5266	93	8610
6	1998	50	5342	94	8686
7	2074	51	5418	95	8762
8	2150	52	5494	96	8838
9	2226	53	5570	97	8914
10	2302	54	5646	98	8990
11	2378	55	5722	99	9066
12	2454	56	5798	100	9142
13	2530	57	5874	101	9218
14	2606	58	5950	102	9294
15	2682	59	6026	103	9370
16	2758	60	6102	104	9446
17	2834	61	6178	105	9522
18	2910	62	6254	106	9598
19	2986	63	6330	107	9674
20	3062	64	6406	108	9750
21	3138	65	6482	109	9826
22	3214	66	6558	110	9902
23	3290	67	6634	111	9978
24	3366	68	6710	112	10054
25	3442	69	6786	113	10130
26	3518	70	6862	114	10206
27	3594	71	6938	115	10282
28	3670	72	7014	116	10358
29	3746	73	7090	117	10434
30	3822	74	7166	118	10510
31	3898	75	7242	119	10586
32	3974	76	7318	120	10662

Ordo	Anni	Ordo	Anni	Ordo	Anni
33	4050	77	7394	121	10738
34	4126	78	7470	122	10814
35	4202	79	7546	123	10890
36	4278	80	7622	124	10966
37	4354	81	7698	125	11042
38	4430	82	7774	126	11118
39	4506	83	7850	127	11194
40	4582	84	7926	128	11270
41	4658	85	8002	129	11346
42	4734	86	8078	130	11422
43	4810	87	8154		
44	4886	88	8230		

Mean new moons of the year 1543

Nouilunia media anni 1543. — Golden Number [Aur. num.] 5.

Left-hand block — years to be added. Heading column, read vertically: ORDINES.
 | Anni Domini | Menses.

ORDINES	Adde
1	1467
2	1391
3	1315
4	1239
5	1163
6	1087
7	1011
8	935
9	859
10	783
11	707
12	631
13	555

ORDINES	Adde
14	479
15	403
16	327
17	251
18	175
19	99
20	23

[Margin: (set vertically beside the Adde column) For these years an addition of time is made, corresponding to the rows.] (*Pro hisce annis fit additio temporis, quod ordinibus respondet.*)

Mean new moons, 1543 — Golden Number 5.

Menses	D	H	M	S
I	5	5	29	28
F	3	18	13	31
M	5	6	57	34
A	3	19	41	37
M	3	8	25	40
I	1	21	9	43
I (braced pair)	1	9	53	46
I (braced pair)	30	22	37	49
A	29	11	21	52
S	28	0	5	55
O	27	12	49	58
N	26	1	34	1
D	25	14	18	4

Beneath the month panel: **For the years on the right, a subtraction of time is made, corresponding to the rows.** (*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*)

Right-hand block — years for subtraction. Three panels set across the page, each headed *Ordines* (vertically) and *Anni Subtrahe.*; merged here left to right into one six-column table.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1619	45	4963	89	8307
2	1695	46	5039	90	8383
3	1771	47	5115	91	8459
4	1847	48	5191	92	8535
5	1923	49	5267	93	8611
6	1999	50	5343	94	8687
7	2075	51	5419	95	8763
8	2151	52	5495	96	8839
9	2227	53	5571	97	8915
10	2303	54	5647	98	8991
11	2379	55	5723	99	9067
12	2455	56	5799	100	9143
13	2531	57	5875	101	9219
14	2607	58	5951	102	9295
15	2683	59	6027	103	9371
16	2759	60	6103	104	9447
17	2835	61	6179	105	9523
18	2911	62	6255	106	9599
19	2987	63	6331	107	9675
20	3063	64	6407	108	9751
21	3139	65	6483	109	9827
22	3215	66	6559	110	9903
23	3291	67	6635	111	9979
24	3367	68	6711	112	10055
25	3443	69	6787	113	10131
26	3519	70	6863	114	10207
27	3595	71	6939	115	10283

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
28	3671	72	7015	116	10359
29	3747	73	7091	117	10435
30	3823	74	7167	118	10511
31	3899	75	7243	119	10587
32	3975	76	7319	120	10663
33	4051	77	7395	121	10739
34	4127	78	7471	122	10815
35	4203	79	7547	123	10891
36	4279	80	7623	124	10967
37	4355	81	7699	125	11043
38	4431	82	7775	126	11119
39	4507	83	7851	127	11195
40	4583	84	7927	128	11271
41	4659	85	8003	129	11347
42	4735	86	8079	130	11423
43	4811	87	8155		
44	4887	88	8231		

Mean new moons of the year 1544

Nouilunia media anni 1544. — Golden Number [Aur. num.] 6.

Left-hand block — years to be added. Heading column, read vertically: ORDINES.
| Anni Domini | Menses.

ORDINES	Adde
1	1468
2	1392
3	1316
4	1240
5	1164
6	1088
7	1012

ORDINES	Adde
8	936
9	860
10	784
11	708
12	632
13	556
14	480
15	404
16	328
17	252
18	176
19	100
20	24

[Margin: (set vertically beside the Adde column) For these years an addition of time is made, corresponding to the rows.] (*Pro hisce annis fit additio temporis, quod ordinibus respondet.*)

Mean new moons, 1544 — Golden Number 6.

Menses	D	H	M	S
I	24	3	2	10
F	22	15	46	13
M	23	4	30	16
A	21	17	14	19
M	21	5	58	22
I	19	18	42	25
I	19	7	26	28
A	17	20	10	31
S	16	8	54	34
O	15	21	38	37
N	14	10	22	40
D	13	23	6	43

Beneath the month panel: **For the years on the right, a subtraction of time is made, corresponding to the rows.** (*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*)

Right-hand block — years for subtraction. Three panels, merged left to right.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1620	45	4964	89	8308
2	1696	46	5040	90	8384
3	1772	47	5116	91	8460
4	1848	48	5192	92	8536
5	1924	49	5268	93	8612
6	2000	50	5344	94	8688
7	2076	51	5420	95	8764
8	2152	52	5496	96	8840
9	2228	53	5572	97	8916
10	2304	54	5648	98	8992
11	2380	55	5724	99	9068
12	2456	56	5800	100	9144
13	2532	57	5876	101	9220
14	2608	58	5952	102	9296
15	2684	59	6028	103	9372
16	2760	60	6104	104	9448
17	2836	61	6180	105	9524
18	2912	62	6256	106	9600
19	2988	63	6332	107	9676
20	3064	64	6408	108	9752
21	3140	65	6484	109	9828
22	3216	66	6560	110	9904
23	3292	67	6636	111	9980
24	3368	68	6712	112	10056
25	3444	69	6788	113	10132
26	3520	70	6864	114	10208

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
27	3596	71	6940	115	10284
28	3672	72	7016	116	10360
29	3748	73	7092	117	10436
30	3824	74	7168	118	10512
31	3900	75	7244	119	10588
32	3976	76	7320	120	10664
33	4052	77	7396	121	10740
34	4128	78	7472	122	10816
35	4204	79	7548	123	10892
36	4280	80	7624	124	10968
37	4356	81	7700	125	11044
38	4432	82	7776	126	11120
39	4508	83	7852	127	11196
40	4584	84	7928	128	11272
41	4660	85	8004	129	11348
42	4736	86	8080	130	11424
43	4812	87	8156		
44	4888	88	8232		

Mean new moons of the year 1545

Nouilunia media anni 1545. — Golden Number [Aur. num.] 7.

Left-hand block — years to be added. Heading column, read vertically: ORDINES.
| Anni Domini | Menses.

ORDINES	Adde
1	1469
2	1393
3	1317
4	1241
5	1165
6	1089

ORDINES	Adde
7	1013
8	937
9	861
10	785
11	709
12	633
13	557
14	481
15	405
16	329
17	253
18	177
19	101
20	25

[Margin: (set vertically beside the Adde column) For these years an addition of time is made, corresponding to the rows.] (*Pro hisce annis fit additio temporis, quod ordinibus respondet.*)

Mean new moons, 1545 — Golden Number 7.

Menses	D	H	M	S
I	12	11	50	47
F	11	0	34	50
M	12	13	18	53
A	11	2	2	56
M	10	14	46	59
I	9	3	31	2
I	8	16	15	5
A	7	4	59	8
S	5	17	43	11
O	5	6	27	14
N	3	19	11	17

Menses	D	H	M	S
D	3	7	55	20

Beneath the month panel: **For the years on the right, a subtraction of time is made, corresponding to the rows.** (*Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.*)

Right-hand block — years for subtraction. Three panels, merged left to right.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1621	45	4965	89	8309
2	1697	46	5041	90	8385
3	1773	47	5117	91	8461
4	1849	48	5193	92	8537
5	1925	49	5269	93	8613
6	2001	50	5345	94	8689
7	2077	51	5421	95	8765
8	2153	52	5497	96	8841
9	2229	53	5573	97	8917
10	2305	54	5649	98	8993
11	2381	55	5725	99	9069
12	2457	56	5801	100	9145
13	2533	57	5877	101	9221
14	2609	58	5953	102	9297
15	2685	59	6029	103	9373
16	2761	60	6105	104	9449
17	2837	61	6181	105	9525
18	2913	62	6257	106	9601
19	2989	63	6333	107	9677
20	3065	64	6409	108	9753
21	3141	65	6485	109	9829
22	3217	66	6561	110	9905
23	3293	67	6637	111	9981
24	3369	68	6713	112	10057

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
25	3445	69	6789	113	10133
26	3521	70	6865	114	10209
27	3597	71	6941	115	10285
28	3673	72	7017	116	10361
29	3749	73	7093	117	10437
30	3825	74	7169	118	10513
31	3901	75	7245	119	10589
32	3977	76	7321	120	10665
33	4053	77	7397	121	10741
34	4129	78	7473	122	10817
35	4205	79	7549	123	10893
36	4281	80	7625	124	10969
37	4357	81	7701	125	11045
38	4433	82	7777	126	11121
39	4509	83	7853	127	11197
40	4585	84	7929	128	11273
41	4661	85	8005	129	11349
42	4737	86	8081	130	11425
43	4813	87	8157		
44	4889	88	8233		

Mean new moons of the year 1546.

Golden number [Aur. num.] 8.

Table of years and rows [ORDINES / Anni Domini]. For these years an addition of time is made, corresponding to the rows.

ORDINES	Anni Domini — Add [Adde]
1	1470
2	1394
3	1318

ORDINES	Anni Domini — Add [Adde]
4	1242
5	1166
6	1090
7	1014
8	938
9	862
10	786
11	710
12	634
13	558
14	482
15	406
16	330
17	254
18	178
19	102
20	26

[Margin: (set vertically beside the *Anni Domini* column) For these years an addition of time is made, which corresponds to the rows. — *Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Months [Menses] and the mean new moon: day, hour, minute, second.

Menses	D	H	M	S
I	1	20	39	25
"	31	9	23	28
M	1	22	7	31
"	31	10	51	34
A	29	23	35	37
M	29	12	19	40
I	28	1	3	43
I	27	13	47	46

Menses	D	H	M	S
A	26	2	31	49
S	24	15	15	52
O	24	3	59	55
N	22	16	43	58
D	22	5	28	1

Years to subtract [Anni Subtrahe]. For the years to the right a subtraction of time is made, corresponding to the rows.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1622	45	4966	89	8310
2	1698	46	5042	90	8386
3	1774	47	5118	91	8462
4	1850	48	5194	92	8538
5	1926	49	5270	93	8614
6	2002	50	5346	94	8690
7	2078	51	5422	95	8766
8	2154	52	5498	96	8842
9	2230	53	5574	97	8918
10	2306	54	5650	98	8994
11	2382	55	5726	99	9070
12	2458	56	5802	100	9146
13	2534	57	5878	101	9222
14	2610	58	5954	102	9298
15	2686	59	6030	103	9374
16	2762	60	6106	104	9450
17	2838	61	6182	105	9526
18	2914	62	6258	106	9602
19	2990	63	6334	107	9678
20	3066	64	6410	108	9754
21	3142	65	6486	109	9830
22	3218	66	6562	110	9906

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
23	3294	67	6638	111	9982
24	3370	68	6714	112	10058
25	3446	69	6790	113	10134
26	3522	70	6866	114	10210
27	3598	71	6942	115	10286
28	3674	72	7018	116	10362
29	3750	73	7094	117	10438
30	3826	74	7170	118	10514
31	3902	75	7246	119	10590
32	3978	76	7322	120	10666
33	4054	77	7398	121	10742
34	4130	78	7474	122	10818
35	4206	79	7550	123	10894
36	4282	80	7626	124	10970
37	4358	81	7702	125	11046
38	4434	82	7778	126	11122
39	4510	83	7854	127	11198
40	4586	84	7930	128	11274
41	4662	85	8006	129	11350
42	4738	86	8082	130	11426
43	4814	87	8158		
44	4890	88	8234		

[Margin: (below the *Menses* block, running the width of the day/hour/minute/second columns) For the years to the right a subtraction of time is made, which corresponds to the rows. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Mean new moons of the year 1547.

Golden number [Aur.Num.] 9.

Table of years and rows [ORDINES / Anni Domini].

ORDINES	Anni Domini — Add [Adde]
1	1471
2	1395
3	1319
4	1243
5	1167
6	1091
7	1015
8	939
9	863
10	787
11	711
12	635
13	559
14	483
15	407
16	331
17	255
18	179
19	103
20	27

[Margin: For these years an addition of time is made, which corresponds to the rows. — *Pro hiſce annis fit additio temporis, quod ordinibus reſpondet.*]

Months [Menses] and the mean new moon: day, hour, minute, second.

Menses	D	H	M	S
I	20	18	12	18
F	15	6	56	11
M	20	19	40	14
A	19	8	24	17
M	18	21	8	20
I	17	9	52	23

Menses	D	H	M	S
I	16	22	36	26
A	15	11	20	29
S	14	0	4	32
O	13	12	48	35
N	12	1	32	38
D	11	14	16	41

Years to subtract [Anni Subtrahe].

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1623	45	4967	89	8311
2	1699	46	5043	90	8387
3	1775	47	5119	91	8463
4	1851	48	5195	92	8539
5	1927	49	5271	93	8615
6	2003	50	5347	94	8691
7	2079	51	5423	95	8767
8	2155	52	5499	96	8843
9	2231	53	5575	97	8919
10	2307	54	5651	98	8995
11	2383	55	5727	99	9071
12	2459	56	5803	100	9147
13	2535	57	5879	101	9223
14	2611	58	5955	102	9299
15	2687	59	6031	103	9375
16	2763	60	6107	104	9451
17	2839	61	6183	105	9527
18	2915	62	6259	106	9603
19	2991	63	6335	107	9679
20	3067	64	6411	108	9755
21	3143	65	6487	109	9831

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
22	3219	66	6563	110	9907
23	3295	67	6639	111	9983
24	3371	68	6715	112	10059
25	3447	69	6791	113	10135
26	3523	70	6867	114	10211
27	3599	71	6943	115	10287
28	3675	72	7019	116	10363
29	3751	73	7095	117	10439
30	3827	74	7171	118	10515
31	3903	75	7247	119	10591
32	3979	76	7323	120	10667
33	4055	77	7399	121	10743
34	4131	78	7475	122	10819
35	4207	79	7551	123	10895
36	4283	80	7627	124	10971
37	4359	81	7703	125	11047
38	4435	82	7779	126	11123
39	4511	83	7855	127	11199
40	4587	84	7931	128	11275
41	4663	85	8007	129	11351
42	4739	86	8083	130	11427
43	4815	87	8159		
44	4891	88	8235		

[Margin: For the years to the right a subtraction of time is made, which corresponds to the rows. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Mean new moons of the year 1548.

Golden number [Aur.Num.] 10.

Table of years and rows [ORDINES / Anni Domini].

ORDINES	Anni Domini — Add [Adde]
1	1472
2	1396
3	1320
4	1244
5	1168
6	1092
7	1016
8	940
9	864
10	788
11	712
12	636
13	560
14	484
15	408
16	332
17	256
18	180
19	104
20	28

[Margin: For these years an addition of time is made, which corresponds to the rows. — *Pro hiſce annis fit additio temporis, quod ordinibus reſpondet.*]

Months [Menses] and the mean new moon: day, hour, minute, second.

Menses	D	H	M	S
I	10	3	0	45
F	8	15	44	48
M	9	4	28	51
A	7	17	12	54
M	7	5	56	57
I	5	18	41	0

Menses	D	H	M	S
I	5	7	25	3
A	3	20	9	6
S	2	8	53	9
O	1	21	37	12
"	31	10	21	15
N	29	23	5	18
D	29	11	49	21

Years to subtract [Anni Subtrahe].

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1624	45	4968	89	8312
2	1700	46	5044	90	8388
3	1776	47	5120	91	8464
4	1852	48	5196	92	8540
5	1928	49	5272	93	8616
6	2004	50	5348	94	8692
7	2080	51	5424	95	8768
8	2156	52	5500	96	8844
9	2232	53	5576	97	8920
10	2308	54	5652	98	8996
11	2384	55	5728	99	9072
12	2460	56	5804	100	9148
13	2536	57	5880	101	9224
14	2612	58	5956	102	9300
15	2688	59	6032	103	9376
16	2764	60	6108	104	9452
17	2840	61	6184	105	9528
18	2916	62	6260	106	9604
19	2992	63	6336	107	9680
20	3068	64	6412	108	9756

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
21	3144	65	6488	109	9832
22	3220	66	6564	110	9908
23	3296	67	6640	111	9984
24	3372	68	6716	112	10060
25	3448	69	6792	113	10136
26	3524	70	6868	114	10212
27	3600	71	6944	115	10288
28	3676	72	7020	116	10364
29	3752	73	7096	117	10440
30	3828	74	7172	118	10516
31	3904	75	7248	119	10592
32	3980	76	7324	120	10668
33	4056	77	7400	121	10744
34	4132	78	7476	122	10820
35	4208	79	7552	123	10896
36	4284	80	7628	124	10972
37	4360	81	7704	125	11048
38	4436	82	7780	126	11124
39	4512	83	7856	127	11200
40	4588	84	7932	128	11276
41	4664	85	8008	129	11352
42	4740	86	8084	130	11428
43	4816	87	8160		
44	4892	88	8236		

[Margin: For the years to the right a subtraction of time is made, which corresponds to the rows. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Mean new moons of the year 1549 — Golden Number 11

Years of the Lord — Add. [Anni Domini. Adde.]

ORDINES	Adde
1	1473
2	1397
3	1321
4	1245
5	1169
6	1093
7	1017
8	941
9	865
10	789
11	713
12	637
13	561
14	485
15	409
16	333
17	257
18	181
19	105
20	29

[Margin: For these years an addition of time is made, which corresponds to the rows. — *Pro hisce annis fit additio tempo-ris, quod ordinibus respondet.*]

Months — Mean new moons of the year 1549. Golden Number 11. [Menfes. — Nouilunia media anni 1549. Aur. Num. 11.]

Menfes	D	H	M	S
I	28	0	33	27
F	26	13	17	30
M	28	2	1	33
A	26	14	45	36
M	26	3	29	39

Menfes	D	H	M	S
I	24	16	13	42
I	24	4	57	45
A	22	17	41	48
S	21	6	25	51
O	20	19	9	54
N	19	7	53	57
D	18	20	38	0

[Margin: For the years to the right a subtraction of time is made, which corresponds to the rows. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Rows — Years, Subtract. [Ordines — Anni Subtrahe.] Three side-by-side panels, merged left to right into one six-column table.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1625	45	4969	89	8313
2	1701	46	5045	90	8389
3	1777	47	5121	91	8465
4	1853	48	5197	92	8541
5	1929	49	5273	93	8617
6	2005	50	5349	94	8693
7	2081	51	5425	95	8769
8	2157	52	5501	96	8845
9	2233	53	5577	97	8921
10	2309	54	5653	98	8997
11	2385	55	5729	99	9073
12	2461	56	5805	100	9149
13	2537	57	5881	101	9225
14	2613	58	5957	102	9301
15	2689	59	6033	103	9377
16	2765	60	6109	104	9453
17	2841	61	6185	105	9529

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
18	2917	62	6261	106	9605
19	2993	63	6337	107	9681
20	3069	64	6413	108	9757
21	3145	65	6489	109	9833
22	3221	66	6565	110	9909
23	3297	67	6641	111	9985
24	3373	68	6717	112	10061
25	3449	69	6793	113	10137
26	3525	70	6869	114	10213
27	3601	71	6945	115	10289
28	3677	72	7021	116	10365
29	3753	73	7097	117	10441
30	3829	74	7173	118	10517
31	3905	75	7249	119	10593
32	3981	76	7325	120	10669
33	4057	77	7401	121	10745
34	4133	78	7477	122	10821
35	4209	79	7553	123	10897
36	4285	80	7629	124	10973
37	4361	81	7705	125	11049
38	4437	82	7781	126	11125
39	4513	83	7857	127	11201
40	4589	84	7933	128	11277
41	4665	85	8009	129	11353
42	4741	86	8085	130	11429
43	4817	87	8161		
44	4893	88	8237		

Mean new moons of the year 1550 — Golden Number 12

Years of the Lord — Add.

ORDINES	Adde
1	1474
2	1398
3	1322
4	1246
5	1170
6	1094
7	1018
8	942
9	866
10	790
11	714
12	638
13	562
14	486
15	410
16	334
17	258
18	182
19	106
20	30

[Margin: For these years an addition of time is made, which corresponds to the rows. — *Pro hisce annis fit additio tempo-ris, quod ordinibus respondet.*]

Months — Mean new moons of the year 1550. Golden Number 12.

Menfes	D	H	M	S
I	17	9	22	4
F	15	22	6	7
M	17	10	50	10
A	15	23	34	13
M	15	12	18	16
I	14	1	2	19

Menfes	D	H	M	S
I	13	13	46	22
A	12	2	30	25
S	10	15	14	28
O	10	3	58	31
N	8	16	42	34
D	8	5	26	37

[Margin: For the years to the right a subtraction of time is made, which corresponds to the rows. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Rows — Years, Subtract. Three side-by-side panels, merged left to right.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1626	45	4970	89	8314
2	1702	46	5046	90	8390
3	1778	47	5122	91	8466
4	1854	48	5198	92	8542
5	1930	49	5274	93	8618
6	2006	50	5350	94	8694
7	2082	51	5426	95	8770
8	2158	52	5502	96	8846
9	2234	53	5578	97	8921
10	2310	54	5654	98	8998
11	2386	55	5730	99	9074
12	2462	56	5806	100	9150
13	2538	57	5882	101	9226
14	2614	58	5958	102	9302
15	2690	59	6034	103	9378
16	2766	60	6110	104	9454
17	2842	61	6186	105	9530
18	2918	62	6262	106	9606
19	2994	63	6338	107	9682

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
20	3070	64	6414	108	9758
21	3146	65	6490	109	9834
22	3222	66	6566	110	9910
23	3298	67	6642	111	9986
24	3374	68	6718	112	10062
25	3450	69	6794	113	10138
26	3526	70	6870	114	10214
27	3602	71	6946	115	10290
28	3678	72	7022	116	10366
29	3754	73	7098	117	10442
30	3830	74	7174	118	10518
31	3906	75	7250	119	10594
32	3982	76	7326	120	10670
33	4058	77	7402	121	10746
34	4134	78	7478	122	10822
35	4210	79	7554	123	10898
36	4286	80	7630	124	10974
37	4362	81	7706	125	11050
38	4438	82	7782	126	11126
39	4514	83	7858	127	11202
40	4590	84	7934	128	11278
41	4666	85	8010	129	11354
42	4742	86	8086	130	11430
43	4818	87	8162		
44	4894	88	8238		

Mean new moons of the year 1551 — Golden Number 13

Years of the Lord — Add.

ORDINES	Adde
1	1475
2	1399
3	1323
4	1247
5	1171
6	1095
7	1019
8	943
9	867
10	791
11	715
12	639
13	563
14	487
15	411
16	335
17	259
18	183
19	107
20	31

[Margin: For these years an addition of time is made, which corresponds to the rows. — *Pro hisce annis fit additio tempo-/ris, quod ordinibus respondet.*]

Months — Mean new moons of the year 1551. Golden Number 13.

August carries two entries, joined by a brace in the source: a mean new moon on the 1st and a second on the 31st.

Menfes	D	H	M	S
I	6	18	10	42
F	5	6	54	45
M	6	19	38	48
A	5	8	22	51

Menfes	D	H	M	S
M	4	21	6	54
I	3	9	50	57
I	2	22	35	0
A	1	11	19	3
A	31	0	3	6
S	29	12	47	9
O	29	1	31	12
N	27	14	15	15
D	27	2	59	18

[Margin: For the years to the right a subtraction of time is made, which corresponds to the rows. — *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.*]

Rows — Years, Subtract. Three side-by-side panels, merged left to right.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1627	45	4971	89	8315
2	1703	46	5047	90	8391
3	1779	47	5123	91	8467
4	1855	48	5199	92	8543
5	1931	49	5275	93	8619
6	2007	50	5351	94	8695
7	2083	51	5427	95	8771
8	2159	52	5503	96	8847
9	2235	53	5579	97	8923
10	2311	54	5655	98	8999
11	2387	55	5731	99	9075
12	2463	56	5807	100	9151
13	2539	57	5883	101	9227
14	2615	58	5959	102	9303
15	2691	59	6035	103	9379
16	2767	60	6111	104	9455

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
17	2843	61	6187	105	9531
18	2919	62	6263	106	9607
19	2995	63	6339	107	9683
20	3071	64	6415	108	9759
21	3147	65	6491	109	9835
22	3223	66	6567	110	9911
23	3299	67	6643	111	9987
24	3375	68	6719	112	10063
25	3451	69	6795	113	10139
26	3527	70	6871	114	10215
27	3603	71	6947	115	10291
28	3679	72	7023	116	10367
29	3755	73	7099	117	10443
30	3831	74	7175	118	10519
31	3907	75	7251	119	10595
32	3983	76	7327	120	10671
33	4059	77	7403	121	10747
34	4135	78	7479	122	10823
35	4211	79	7555	123	10899
36	4287	80	7631	124	10975
37	4363	81	7705	125	11051
38	4439	82	7783	126	11127
39	4515	83	7859	127	11203
40	4591	84	7935	128	11279
41	4667	85	8011	129	11355
42	4743	86	8087	130	11431
43	4819	87	8163		
44	4895	88	8239		

Mean new moons of the year 1552 (Golden Number 14)

Table. Frame heads, verbatim: ORDINES. | Anni Domini | Menfes. | Nouilunia media anni 1552. / Aur.Num. 14. / D H M S | three right-hand panels each headed Ordines | Anni Subtrahe.

Left block — ORDINES. and Anni Domini (Adde — add)

Ordo	Adde
1	1476
2	1400
3	1324
4	1248
5	1172
6	1096
7	1020
8	944
9	868
10	792
11	716
12	640
13	564
14	488
15	412
16	336
17	260
18	184
19	108
20	32

Foot-note set vertically alongside this block: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, the time corresponding to the rows."

Nouilunia media anni 1552. — Aur.Num. 14.

Menfis	D	H	M	S
I	25	15	43	25
F	24	4	27	28
M	24	17	11	31
A	23	5	55	34
M	22	18	39	37
I	21	7	23	40
I	20	20	7	43
A	19	8	51	46
S	17	21	35	49
O	17	10	19	52
N	15	23	3	55
D	15	11	47	58

Note printed beneath this block: *Pro annis ad dextram fit subtractio tēporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, the time corresponding to the rows."

Ordines / Anni Subtrahe. — three panels (years to subtract)

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1628	45	4972	89	8316
2	1704	46	5048	90	8392
3	1780	47	5124	91	8468
4	1856	48	5200	92	8544
5	1932	49	5276	93	8620
6	2008	50	5352	94	8696
7	2084	51	5428	95	8772
8	2160	52	5504	96	8848
9	2236	53	5580	97	8924
10	2312	54	5656	98	9000
11	2388	55	5732	99	9076
12	2464	56	5808	100	9152

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
13	2540	57	5884	101	9228
14	2616	58	5960	102	9304
15	2692	59	6036	103	9380
16	2768	60	6112	104	9456
17	2844	61	6188	105	9532
18	2920	62	6264	106	9608
19	2996	63	6340	107	9684
20	3072	64	6416	108	9760
21	3148	65	6492	109	9836
22	3224	66	6568	110	9912
23	3300	67	6644	111	9988
24	3376	68	6720	112	10064
25	3452	69	6796	113	10140
26	3528	70	6872	114	10216
27	3604	71	6948	115	10292
28	3680	72	7024	116	10368
29	3756	73	7100	117	10444
30	3832	74	7176	118	10520
31	3908	75	7252	119	10596
32	3984	76	7328	120	10672
33	4060	77	7404	121	10748
34	4136	78	7480	122	10824
35	4212	79	7556	123	10900
36	4288	80	7632	124	10976
37	4364	81	7708	125	11052
38	4440	82	7784	126	11128
39	4516	83	7860	127	11204
40	4592	84	7936	128	11280
41	4668	85	8012	129	11356

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
42	4744	86	8088	130	11432
43	4820	87	8164		
44	4896	88	8240		

Mean new moons of the year 1553 (Golden Number 15)

Table. Same frame and heads as the preceding page, with *Nouilunia media anni* 1553. / *Aur.Num.* 15.

Left block — ORDINES. and Anni Domini (Adde)

Ordo	Adde
1	1477
2	1401
3	1325
4	1249
5	1173
6	1097
7	1011 [recte: 1021 — the column's own step of 76 gives 1097 – 76 = 1021, and the same ordo reads 1020 on p. 228 and 1022 on p. 230]
8	945
9	869
10	793
11	717
12	641
13	565
14	489
15	413
16	337
17	261
18	185
19	109
20	33

Foot-note set vertically alongside: *Pro hifce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, the time corresponding to the rows."

Nouilunia media anni 1553. — Aur.Num. 15.

Menfis	D	H	M	S
I	14	0	32	2
F	12	13	16	5
M	14	2	0	8
A	12	14	44	11
M	12	3	28	14
I	10	16	12	17
I	10	4	56	20
A	8	17	40	23
S	7	6	24	26
O	6	19	8	29
N	5	7	52	32
D	4	20	36	35

Note printed beneath: *Pro annis ad dextram fit fubtractio tēporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, the time corresponding to the rows."

Ordines / Anni Subtrahe. — three panels

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1629	45	4973	89	8317
2	1705	46	5049	90	8393
3	1781	47	5125	91	8469
4	1857	48	5201	92	8545
5	1933	49	5277	93	8621
6	2009	50	5353	94	8697
7	2085	51	5429	95	8773
8	2161	52	5505	96	8849
9	2237	53	5581	97	8925

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
10	2313	54	5657	98	9001
11	2389	55	5733	99	9077
12	2465	56	5809	100	9153
13	2541	57	5885	101	9229
14	2617	58	5961	102	9305
15	2693	59	6037	103	9381
16	2769	60	6113	104	9457
17	2845	61	6189	105	9533
18	2921	62	6265	106	9609
19	2997	63	6341	107	9685
20	3073	64	6417	108	9761
21	3149	65	6493	109	9837
22	3225	66	6569	110	9913
23	3301	67	6645	111	9989
24	3377	68	6721	112	10065
25	3453	69	6797	113	10141
26	3529	70	6873	114	10217
27	3605	71	6949	115	10293
28	3681	72	7025	116	10369
29	3757	73	7101	117	10445
30	3833	74	7177	118	10521
31	3909	75	7253	119	10597
32	3985	76	7329	120	10673
33	4061	77	7405	121	10749
34	4137	78	7481	122	10825
35	4213	79	7557	123	10901
36	4289	80	7633	124	10977
37	4365	81	7709	125	11053
38	4441	82	7785	126	11129
39	4517	83	7861	127	11205

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
40	4593	84	7937	128	11281
41	4669	85	8013	129	11357
42	4745	86	8089	130	11433
43	4821	87	8165		
44	4897	88	8241		

Mean new moons of the year 1554 (Golden Number 16)

Table. Same frame and heads, with Nouilunia media anni 1554. / Aur.Num. 16.

Left block — ORDINES. and Anni Domini (Adde)

Ordo	Adde
1	1478
2	1402
3	1326
4	1250
5	1174
6	1098
7	1022
8	946
9	870
10	794
11	718
12	642
13	566
14	490
15	414
16	338
17	262
18	186
19	110
20	34

Foot-note set vertically alongside: *Pro hifce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, the time corresponding to the rows."

Nouilunia media anni 1554. — Aur.Num. 16.

Menfis	D	H	M	S
I	3	9	20	40
F	1	22	4	43
M	3	10	48	46
A	1	23	32	49
M (braced, first)	1	12	16	52
M (braced, second)	31	1	0	55
I	29	13	44	58
I	29	2	29	1
A	27	15	13	4
S	26	3	57	7
O	25	16	41	10
N	24	5	25	13
D	23	18	9	16

The month letter M (May) is set once against a printed brace embracing two time-rows: the year is embolismic and May carries two mean new moons.

Note printed beneath: *Pro annis ad dextram fit fubtractio tēporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, the time corresponding to the rows."

Ordines / Anni Subtrahe. — three panels

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1630	45	4974	89	8318
2	1706	46	5050	90	8394
3	1782	47	5126	91	8470
4	1858	48	5202	92	8546
5	1934	49	5278	93	8622
6	2010	50	5354	94	8698

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
7	2086	51	5430	95	8774
8	2162	52	5506	96	8850
9	2238	53	5582	97	8926
10	2314	54	5658	98	9002
11	2390	55	5734	99	9078
12	2466	56	5810	100	9154
13	2542	57	5886	101	9230
14	2618	58	5962	102	9306
15	2694	59	6038	103	9382
16	2770	60	6114	104	9458
17	2846	61	6190	105	9534
18	2922	62	6266	106	9610
19	2998	63	6342	107	9686
20	3074	64	6418	108	9762
21	3150	65	6494	109	9838
22	3226	66	6570	110	9914
23	3302	67	6646	111	9990
24	3378	68	6722	112	10066
25	3454	69	6798	113	10142
26	3530	70	6874	114	10218
27	3606	71	6950	115	10294
28	3682	72	7026	116	10370
29	3758	73	7102	117	10446
30	3834	74	7178	118	10522
31	3910	75	7254	119	10598
32	3986	76	7330	120	10674
33	4062	77	7406	121	10750
34	4138	78	7482	122	10826
35	4214	79	7558	123	10902

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
36	4290	80	7634	124	10978
37	4366	81	7710	125	11054
38	4442	82	7786	126	11130
39	4518	83	7862	127	11206
40	4594	84	7938	128	11282
41	4670	85	8014	129	11358
42	4746	86	8090	130	11434
43	4822	87	8166		
44	4898	88	8242		

Mean new moons of the year 1555 — Golden Number 17

Frame heads (verbatim): ORDINES. | Anni Domini / Adde | Menfes. | Nouilunia
media anni 1555. / Aur. num. 17. / D H M S | Ordines / Anni Subtrahe.

Left-hand panel — orders and the years to be added.

[Margin: (foot of the Anni Domini column, set vertically) For these years an addition of time is to be made, corresponding to the orders.]

ORDINES.	Anni Domini — Adde
1	1479
2	1403
3	1327
4	1251
5	1175
6	1099
7	1023
8	947
9	871
10	795
11	719
12	643
13	567

ORDINES.	Anni Domini — Adde
14	491
15	415
16	339
17	263
18	187
19	111
20	35

Months and the mean new moons of 1555 (Golden Number 17), in days, hours, minutes, seconds.

Menfes.	D	H	M	S
I	22	6	53	22
F	20	19	37	25
M	22	8	21	28
A	20	21	5	31
M	20	9	49	34
I	18	22	33	37
I	18	11	17	40
A	17	0	1	43
S	15	12	45	46
O	15	1	29	49
N	13	14	13	52
D	13	2	57	55

[Margin: (at the foot of the D H M S block) For the years to the right, a subtraction of time is made, corresponding to the orders.]

Right-hand panels — orders and the years to be subtracted.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1631	45	4975	89	8319
2	1707	46	5051	90	8395
3	1783	47	5127	91	8471

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
4	1859	48	5203	92	8547
5	1935	49	5279	93	8623
6	2011	50	5355	94	8699
7	2087	51	5431	95	8775
8	2163	52	5507	96	8851
9	2239	53	5583	97	8927
10	2315	54	5659	98	9003
11	2391	55	5735	99	9079
12	2467	56	5811	100	9155
13	2543	57	5887	101	9231
14	2619	58	5963	102	9307
15	2695	59	6039	103	9383
16	2771	60	6115	104	9459
17	2847	61	6191	105	9535
18	2923	62	6267	106	9611
19	2999	63	6343	107	9687
20	3075	64	6419	108	9763
21	3151	65	6495	109	9839
22	3227	66	6571	110	9915
23	3303	67	6647	111	9991
24	3379	68	6723	112	10067
25	3455	69	6799	113	10143
26	3531	70	6875	114	10219
27	3607	71	6951	115	10295
28	3683	72	7027	116	10371
29	3759	73	7103	117	10447
30	3835	74	7179	118	10523
31	3911	75	7255	119	10599
32	3987	76	7331	120	10675
33	4063	77	7407	121	10751

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
34	4139	78	7483	122	10827
35	4215	79	7559	123	10903
36	4291	80	7635	124	10979
37	4367	81	7711	125	11055
38	4443	82	7787	126	11131
39	4519	83	7863	127	11207
40	4595	84	7939	128	11283
41	4671	85	8015	129	11359
42	4747	86	8091	130	11435
43	4823	87	8167		
44	4899	88	8243		

Mean new moons of the year 1556 — Golden Number 18

Frame heads (verbatim): ORDINES. | Anni Domini / Adde | Menfes. | Nouilunia
media anni 1556. / Aur. num. 18. / D H M S | Ordines / Anni Subtrahe.

[Margin: (foot of the Anni Domini column, set vertically) For these years an addition of time is to be made, corresponding to the orders.]

ORDINES.	Anni Domini — Adde
1	1480
2	1404
3	1328
4	1252
5	1176
6	1100
7	1024
8	948
9	872
10	796
11	720
12	644

ORDINES.	Anni Domini — Adde
13	568
14	492
15	416
16	340
17	264
18	188
19	112
20	36

Menfes.	D	H	M	S
I	11	15	41	59
F	10	4	26	2
M	10	17	10	5
A	9	5	54	8
M	8	18	38	11
I	7	7	22	14
I	6	20	6	17
A	5	8	50	20
S	3	21	34	23
O	3	10	18	26
N	1	23	2	29
D (braced pair)	1	11	46	32
D (braced pair)	31	0	30	35

[Margin: (at the foot of the D H M S block) For the years to the right, a subtraction of time is made, corresponding to the orders.]

Ordine		Ordine		Ordine	
s	Anni Subtrahe.	s	Anni Subtrahe.	s	Anni Subtrahe.
1	1632	45	4976	89	8320
2	1708	46	5052	90	8396
3	1784	47	5128	91	8472

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
4	1860	48	5204	92	8548
5	1936	49	5280	93	8624
6	2012	50	5356	94	8700
7	2088	51	5432	95	8776
8	2164	52	5508	96	8852
9	2240	53	5584	97	8928
10	2316	54	5660	98	9004
11	2392	55	5736	99	9080
12	2468	56	5812	100	9156
13	2544	57	5888	101	9232
14	2620	58	5964	102	9308
15	2696	59	6040	103	9384
16	2772	60	6116	104	9460
17	2848	61	6192	105	9536
18	2924	62	6268	106	9612
19	3000	63	6344	107	9688
20	3076	64	6420	108	9764
21	3152	65	6496	109	9840
22	3228	66	6572	110	9916
23	3304	67	6648	111	9992
24	3380	68	6724	112	10068
25	3456	69	6800	113	10144
26	3532	70	6876	114	10220
27	3608	71	6952	115	10296
28	3684	72	7028	116	10372
29	3760	73	7104	117	10448
30	3836	74	7180	118	10524
31	3912	75	7256	119	10600
32	3988	76	7332	120	10676
33	4064	77	7408	121	10752

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
34	4140	78	7484	122	10828
35	4216	79	7560	123	10904
36	4292	80	7636	124	10980
37	4368	81	7712	125	11056
38	4444	82	7788	126	11132
39	4520	83	7864	127	11208
40	4596	84	7940	128	11284
41	4672	85	8016	129	11360
42	4748	86	8092	130	11436
43	4824	87	8168		
44	4900	88	8244		

Mean new moons of the year 1557 — Golden Number 19

Frame heads (verbatim): ORDINES. | Anni Domini / Adde | Menfes. | Nouilunia
media anni 1557. / Aur.Num. 19. / D H M S | Ordines / Anni Subtrahe.

[Margin: (foot of the Anni Domini column, set vertically) For these years an addition of time is to be made, corresponding to the orders.]

ORDINES.	Anni Domini — Adde
1	1481
2	1405
3	1329
4	1253
5	1177
6	1101
7	1025
8	949
9	873
10	797
11	721
12	645

ORDINES.	Anni Domini — Adde
13	569
14	493
15	417
16	341
17	265
18	189
19	113
20	37

Menfes.	D	H	M	S
I	29	13	14	42
F	28	1	58	45
M	29	14	42	48
A	28	3	26	51
M	27	16	10	54
I	26	4	54	57
I	25	17	39	0
A	24	6	23	3
S	22	19	7	6
O	22	7	51	9
N	20	20	35	12
D	20	9	19	15

[Margin: (at the foot of the D H M S block) For the years to the right, a subtraction of time is made, corresponding to the orders.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1633	45	4977	89	8521
2	1709	46	5053	90	8397
3	1785	47	5129	91	8473
4	1861	48	5205	92	8549

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
5	1937	49	5281	93	8625
6	2013	50	5357	94	8701
7	2089	51	5433	95	8777
8	2165	52	5509	96	8853
9	2241	53	5585	97	8929
10	2317	54	5661	98	9005
11	2393	55	5737	99	9081
12	2469	56	5813	100	9157
13	2545	57	5889	101	9233
14	2621	58	5965	102	9309
15	2697	59	6041	103	9385
16	2773	60	6117	104	9461
17	2849	61	6193	105	9537
18	2925	62	6269	106	9613
19	3001	63	6345	107	9689
20	3077	64	6421	108	9765
21	3153	65	6497	109	9841
22	3229	66	6573	110	9917
23	3305	67	6649	111	9993
24	3381	68	6725	112	10069
25	3457	69	6801	113	10145
26	3533	70	6877	114	10221
27	3609	71	6953	115	10297
28	3685	72	7029	116	10373
29	3761	73	7105	117	10449
30	3837	74	7181	118	10525
31	3913	75	7257	119	10601
32	3989	76	7333	120	10677
33	4065	77	7409	121	10753
34	4141	78	7485	122	10829

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
35	4217	79	7561	123	10905
36	4293	80	7637	124	10981
37	4369	81	7713	125	11057
38	4445	82	7789	126	11133
39	4521	83	7865	127	11209
40	4597	84	7941	128	11285
41	4673	85	8017	129	11361
42	4749	86	8093	130	11437
43	4825	87	8169		
44	4901	88	8245		

Mean new moons of the year 1558 — Golden Number 1

The full-page table is laid out in two parts. On the left stand the columns ORDINES (orders), Anni Domini (with the stub-head Adde, "Add"), Menses (months), and the four time-columns D H M S (days, hours, minutes, seconds) headed Nouilunia media anni 1558. Aur.Num. 1. — "Mean new moons of the year 1558. Golden Number 1." On the right stand three panels of Ordines / Anni Subtrahe. ("Orders / Years: subtract").

Left part. Column headings as printed: ORDINES. | Anni Domini — Adde | Menses. | Nouilunia media anni 1558. — Aur.Num. I. — D H M S.

ORDINES	Anni Domini — Adde
1	1482
2	1406
3	1330
4	1254
5	1178
6	1102
7	1026
8	950
9	874
10	798

ORDINES	Anni Domini — Adde
11	722
12	646
13	570
14	494
15	418
16	342
17	266
18	190
19	114
20	38

Menses	D	H	M	S
I	18	22	3	20
F	17	10	47	23
M	18	23	31	26
A	17	12	15	29
M	17	0	59	32
I	15	13	43	35
I	15	2	27	38
A	13	15	11	41
S	12	3	55	44
O	11	16	39	47
N	10	5	23	50
D	9	18	7	53

[Vertical note running up the foot of the Anni Domini column: "Pro hisce annis fit additio temporis, quod ordinibus respondet." — "For these years, the time corresponding to the orders is to be added."]

[Note in the foot of the time-columns: "Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet." — "For the years to the right, the time corresponding to the orders is to be subtracted."]

Right part — three panels, each headed Ordines | Anni Subtrahe.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1634	45	4978	89	8322
2	1710	46	5054	90	8398
3	1786	47	5130	91	8474
4	1862	48	5206	92	8550
5	1938	49	5282	93	8626
6	2014	50	5358	94	8702
7	2090	51	5434	95	8778
8	2166	52	5510	96	8854
9	2242	53	5586	97	8930
10	2318	54	5662	98	9006
11	2394	55	5738	99	9082
12	2470	56	5814	100	9158
13	2546	57	5890	101	9234
14	2622	58	5966	102	9310
15	2698	59	6042	103	9386
16	2774	60	6118	104	9462
17	2850	61	6194	105	9538
18	2926	62	6270	106	9614
19	3002	63	6346	107	9690
20	3078	64	6422	108	9766
21	3154	65	6498	109	9842
22	3230	66	6574	110	9918
23	3306	67	6650	111	9994
24	3382	68	6726	112	10070
25	3458	69	6802	113	10146
26	3534	70	6878	114	10222
27	3610	71	6954	115	10298
28	3686	72	7030	116	10374
29	3762	73	7106	117	10450
30	3838	74	7182	118	10526

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3914	75	7258	119	10602
32	3990	76	7334	120	10678
33	4066	77	7410	121	10754
34	4142	78	7486	122	10830
35	4218	79	7562	123	10906
36	4294	80	7638	124	10982
37	4370	81	7714	125	11058
38	4446	82	7790	126	11134
39	4522	83	7866	127	11210
40	4598	84	7942	128	11286
41	4674	85	8018	129	11362
42	4750	86	8094	130	11438
43	4826	87	8170		
44	4902	88	8246		

Mean new moons of the year 1559 — Golden Number 2

Column headings as printed: ORDINES. | Anni Domini — Adde | Menfes. | Nouilunia
media anni 1559. — Aur. num. 2. — D H M S.

ORDINES	Anni Domini — Adde
1	1483
2	1407
3	1331
4	1255
5	1179
6	1103
7	1027
8	951
9	875
10	799
11	723

ORDINES	Anni Domini — Adde
12	647
13	571
14	495
15	419
16	343
17	267
18	191
19	115
20	39

Menses	D	H	M	S
I	8	6	51	57
F	6	19	36	0
M	8	8	20	3
A	6	21	4	6
M	6	9	48	9
I	4	22	32	12
I	4	11	16	15
A	3	0	0	18
S	1	12	44	21
O (first of two)	1	1	28	24
O (second of two)	30	14	12	27
N	29	2	56	30
D	28	15	40	33

[Vertical note running up the foot of the Anni Domini column: "Pro hiſce annis fit additio temporis, quod ordinibus reſpondet." — "For theſe years, the time correſponding to the orders is to be added."]

[Note in the foot of the time-columns: "Pro annis ad dextram fit ſubtractio téporis, quod ordinibus reſpondet." — "For the years to the right, the time correſponding to the orders is to be ſubtracted."]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1635	45	4979	89	8323
2	1711	46	5055	90	8399
3	1787	47	5131	91	8475
4	1863	48	5207	92	8551
5	1939	49	5283	93	8627
6	2015	50	5359	94	8703
7	2091	51	5435	95	8779
8	2167	52	5511	96	8855
9	2243	53	5587	97	8931
10	2319	54	5663	98	9007
11	2395	55	5739	99	9083
12	2471	56	5815	100	9159
13	2547	57	5891	101	9235
14	2623	58	5967	102	9311
15	2699	59	6043	103	9387
16	2775	60	6119	104	9463
17	2851	61	6195	105	9539
18	2927	62	6271	106	9615
19	3003	63	6347	107	9691
20	3079	64	6423	108	9767
21	3155	65	6499	109	9843
22	3231	66	6575	110	9919
23	3307	67	6651	111	9995
24	3383	68	6727	112	10071
25	3459	69	6803	113	10147
26	3535	70	6879	114	10223
27	3611	71	6955	115	10299
28	3687	72	7031	116	10375
29	3763	73	7107	117	10451
30	3839	74	7183	118	10527

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3915	75	7259	119	10603
32	3991	76	7335	120	10679
33	4067	77	7411	121	10755
34	4143	78	7487	122	10831
35	4219	79	7563	123	10907
36	4295	80	7639	124	10983
37	4371	81	7715	125	11059
38	4447	82	7791	126	11135
39	4523	83	7867	127	11211
40	4599	84	7943	128	11287
41	4675	85	8019	129	11363
42	4751	86	8095	130	11439
43	4827	87	8171		
44	4903	88	8247		

Mean new moons of the year 1560 — Golden Number 3

Column headings as printed: ORDINES. | Anni Domini — Adde | Menfes. | Nouilunia
media anni 1560. — Aur. num. 3. — D H M S.

ORDINES	Anni Domini — Adde
1	1484
2	1408
3	1332
4	1256
5	1180
6	1104
7	1028
8	952
9	876
10	800
11	724

ORDINES	Anni Domini — Adde
12	648
13	572
14	496
15	420
16	344
17	268
18	192
19	116
20	40

Menses	D	H	M	S
I	27	4	24	39
F	25	17	8	42
M	26	5	52	45
A	24	18	36	48
M	24	7	20	51
I	22	20	4	54
I	22	8	48	57
A	20	21	33	0
S	19	10	17	3
O	18	23	1	6
N	17	11	45	9
D	17	0	29	12

[Vertical note running up the foot of the Anni Domini column: "Pro hisce annis fit additio temporis, quod ordinibus respondet." — "For these years, the time corresponding to the orders is to be added."]

[Note in the foot of the time-columns: "Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet." — "For the years to the right, the time corresponding to the orders is to be subtracted."]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1636	45	4980	89	8324
2	1712	46	5056	90	8400
3	1788	47	5132	91	8476
4	1864	48	5208	92	8552
5	1940	49	5284	93	8628
6	2016	50	5360	94	8704
7	2092	51	5436	95	8780
8	2168	52	5512	96	8856
9	2244	53	5588	97	8932
10	2320	54	5664	98	9008
11	2396	55	5740	99	9084
12	2472	56	5816	100	9160
13	2548	57	5892	101	9236
14	2624	58	5968	102	9312
15	2700	59	6044	103	9388
16	2776	60	6120	104	9464
17	2852	61	6196	105	9540
18	2928	62	6272	106	9616
19	3004	63	6348	107	9692
20	3080	64	6424	108	9768
21	3156	65	6500	109	9844
22	3232	66	6576	110	9920
23	3308	67	6652	111	9996
24	3384	68	6728	112	10072
25	3460	69	6804	113	10148
26	3536	70	6880	114	10224
27	3612	71	6956	115	10300
28	3688	72	7032	116	10376
29	3764	73	7108	117	10452
30	3840	74	7184	118	10528

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3916	75	7260	119	10604
32	3992	76	7336	120	10680
33	4068	77	7412	121	10756
34	4144	78	7488	122	10832
35	4220	79	7564	123	10908
36	4296	80	7640	124	10984
37	4372	81	7716	125	11060
38	4448	82	7792	126	11136
39	4524	83	7868	127	11212
40	4600	84	7944	128	11288
41	4676	85	8020	129	11364
42	4752	86	8096	130	11440
43	4828	87	8172		
44	4904	88	8248		

Mean new moons of the year 1561 — Golden Number 4

Table. *Nouilunia media anni 1561. Aur.Num. 4.* ("Mean new moons of the year 1561. Golden Number 4.") The frame carries, from left to right: an ORDINES ("Ranks") column with its Anni Domini / Adde ("Years of the Lord / Add") column; a Menses ("Months") column with the mean-new-moon times in D | H | M | S (days, hours, minutes, seconds); and three further panels of Ordines / Anni Subtrahe. ("Ranks / Years — subtract").

A. ORDINES and Anni Domini – Adde

ORDINES	Adde
1	1485
2	1409
3	1333
4	1257
5	1181
6	1105
7	1029

ORDINES	Adde
8	953
9	877
10	801
11	725
12	649
13	573
14	497
15	421
16	345
17	269
18	193
19	117
20	41

Note set vertically at the foot of this column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years the addition of time is made that corresponds to the ranks."

B. Menses and Nouilunia media anni 1561, Aur. Num. 4.

Menses	D	H	M	S
I	15	13	13	16
F	14	1	57	19
M	15	14	41	22
A	14	3	25	25
M	13	16	9	28
I	12	4	53	31
I	11	17	37	34
A	10	6	21	37
S	8	19	5	40
O	8	7	49	43
N	6	20	33	46
D	6	9	17	49

Note set below this panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right the subtraction of time is made that corresponds to the ranks."

C. Ordines / Anni Subtrahe. — three panels

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1637	45	4981	89	8325
2	1713	46	5057	90	8401
3	1789	47	5133	91	8477
4	1865	48	5209	92	8553
5	1941	49	5285	93	8629
6	2017	50	5361	94	8705
7	2093	51	5437	95	8781
8	2169	52	5513	96	8857
9	2245	53	5589	97	8933
10	2321	54	5665	98	9009
11	2397	55	5741	99	9085
12	2473	56	5817	100	9161
13	2549	57	5893	101	9237
14	2625	58	5969	102	9313
15	2701	59	6045	103	9389
16	2777	60	6121	104	9465
17	2853	61	6197	105	9541
18	2929	62	6273	106	9617
19	3005	63	6349	107	9693
20	3081	64	6425	108	9769
21	3157	65	6501	109	9845
22	3233	66	6577	110	9921
23	3309	67	6653	111	9997
24	3385	68	6729	112	10073
25	3461	69	6805	113	10149
26	3537	70	6881	114	10225

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
27	3613	71	6957	115	10301
28	3689	72	7033	116	10377
29	3765	73	7109	117	10453
30	3841	74	7185	118	10529
31	3917	75	7261	119	10605
32	3993	76	7337	120	10681
33	4069	77	7413	121	10757
34	4145	78	7489	122	10833
35	4221	79	7565	123	10909
36	4297	80	7641	124	10985
37	4373	81	7717	125	11061
38	4449	82	7793	126	11137
39	4525	83	7869	127	11213
40	4601	84	7945	128	11289
41	4677	85	8021	129	11365
42	4753	86	8097	130	11441
43	4829	87	8173		
44	4905	88	8249		

Mean new moons of the year 1562 — Golden Number 5

Table. *Nouilunia media anni 1562. Aur.Num. 5.* ("Mean new moons of the year 1562. Golden Number 5.") Same frame as the preceding page. In this year the seventh month carries two mean new moons, braced together in a single 1 (July) row.

A. ORDINES and Anni Domini – Adde

ORDINES	Adde
1	1486
2	1410
3	1334
4	1258

ORDINES	Adde
5	1182
6	1106
7	1030
8	954
9	878
10	802
11	726
12	650
13	574
14	498
15	422
16	346
17	270
18	194
19	118
20	42

Note set vertically at the foot of this column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years the addition of time is made that corresponds to the ranks."

B. Menses and Nouilunia media anni 1562, Aur. Num. 5.

Menses	D	H	M	S
I	4	22	1	55
F	3	10	45	58
M	4	23	30	1
A	3	12	14	4
M	3	0	58	7
I	1	13	42	10
I (braced, first)	1	2	26	13
I (braced, second)	30	15	10	16
A	29	3	54	19

Menses	D	H	M	S
S	27	16	38	22
O	27	5	22	25
N	25	18	6	28
D	25	6	50	31

Note set below this panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right the subtraction of time is made that corresponds to the ranks."

C. Ordines / Anni Subtrahe. — three panels

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1638	45	4982	89	8326
2	1714	46	5058	90	8402
3	1790	47	5134	91	8478
4	1866	48	5210	92	8554
5	1942	49	5286	93	8630
6	2018	50	5362	94	8706
7	2094	51	5438	95	8782
8	2170	52	5514	96	8858
9	2246	53	5590	97	8934
10	2322	54	5666	98	9010
11	2498	55	5742	99	9086
12	2474	56	5818	100	9162
13	2550	57	5894	101	9238
14	2626	58	5970	102	9314
15	2702	59	6046	103	9390
16	2778	60	6122	104	9466
17	2854	61	6198	105	9542
18	2930	62	6274	106	9618
19	3006	63	6350	107	9694
20	3082	64	6426	108	9770
21	3158	65	6502	109	9846

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
22	3234	66	6578	110	9922
23	3310	67	6654	111	9998
24	3386	68	6730	112	10074
25	3462	69	6806	113	10150
26	3538	70	6882	114	10226
27	3614	71	6958	115	10302
28	3690	72	7034	116	10378
29	3766	73	7110	117	10454
30	3842	74	7186	118	10530
31	3918	75	7262	119	10606
32	3994	76	7338	120	10682
33	4070	77	7414	121	10758
34	4146	78	7490	122	10834
35	4222	79	7566	123	10910
36	4298	80	7642	124	10986
37	4374	81	7718	125	11062
38	4450	82	7794	126	11138
39	4526	83	7870	127	11214
40	4602	84	7946	128	11290
41	4678	85	8022	129	11366
42	4754	86	8098	130	11442
43	4830	87	8174		
44	4906	88	8250		

Mean new moons of the year 1563 — Golden Number 6

Table. *Nouilunia media anni 1563. Aur.num. 6.* ("Mean new moons of the year 1563. Golden Number 6.") Note that the rubric on this page is set *Aur.num.* with a small n, where the two preceding pages set *Aur.Num.*

A. ORDINES and Anni Domini – Adde

ORDINES	Adde
1	1487
2	1411
3	1335
4	1259
5	1183
6	1107
7	1031
8	955
9	879
10	803
11	727
12	651
13	575
14	499
15	423
16	347
17	271
18	195
19	119
20	43

Note set vertically at the foot of this column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years the addition of time is made that corresponds to the ranks."

B. Menses and Nouilunia media anni 1563, Aur.num. 6.

Menses	D	H	M	S
I	23	19	34	37
F	22	8	18	40
M	23	21	2	43
A	22	9	46	46
M	21	22	30	49

Menses	D	H	M	S
I	20	11	14	52
I	19	23	58	55
A	18	12	42	58
S	17	1	27	1
O	16	14	11	4
N	15	2	55	7
D	14	15	39	10

Note set below this panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right the subtraction of time is made that corresponds to the ranks."

C. Ordines / Anni Subtrahe. — three panels

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1639	45	4983	89	8327
2	1715	46	5059	90	8403
3	1791	47	5135	91	8479
4	1867	48	5211	92	8555
5	1943	49	5287	93	8631
6	2019	50	5363	94	8707
7	2095	51	5439	95	8783
8	2171	52	5515	96	8859
9	2247	53	5591	97	8935
10	2323	54	5667	98	9011
11	2399	55	5743	99	9087
12	2475	56	5819	100	9163
13	2551	57	5895	101	9239
14	2627	58	5971	102	9315
15	2703	59	6047	103	9391
16	2779	60	6123	104	9467
17	2855	61	6199	105	9543
18	2931	62	6275	106	9619

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
19	3007	63	6351	107	9695
20	3083	64	6427	108	9771
21	3159	65	6503	109	9847
22	3235	66	6579	110	9923
23	3311	67	6655	111	9999
24	3387	68	6731	112	10075
25	3463	69	6807	113	10151
26	3539	70	6883	114	10227
27	3615	71	6959	115	10303
28	3691	72	7035	116	10379
29	3767	73	7111	117	10455
30	3843	74	7187	118	10531
31	3919	75	7263	119	10607
32	3995	76	7339	120	10683
33	4071	77	7415	121	10759
34	4147	78	7491	122	10835
35	4223	79	7567	123	10911
36	4299	80	7643	124	10987
37	4375	81	7719	125	11063
38	4451	82	7795	126	11139
39	4527	83	7871	127	11215
40	4603	84	7947	128	11291
41	4679	85	8023	129	11367
42	4755	86	8099	130	11443
43	4831	87	8175		
44	4907	88	8251		

Mean new moons of the year 1564. Golden Number 7.

Nouilunia media anni 1564. — Aur.num. 7.

Mean new moons of the year 1564 — Golden Number 7.

Menses [Months]	D	H	M	S
I	13	4	23	14
F	11	17	7	17
M	12	5	51	20
A	10	18	35	23
M	10	7	19	26
I	8	20	3	29
I	8	8	47	32
A	6	21	31	35
S	5	10	15	38
O	4	22	59	41
N	3	11	43	44
D	3	0	27	47

ORDINES. — Anni Domini. Adde. *Orders — Years of the Lord. Add.* [Column note, set vertically: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, corresponding to the orders."]

Ordo	Adde	Ordo	Adde
1	1488	11	728
2	1412	12	652
3	1336	13	576
4	1260	14	500
5	1184	15	424
6	1108	16	348
7	1032	17	272
8	956	18	196
9	880	19	120
10	804	20	44

Ordines — Anni Subtrahe. *Orders — Years: subtract.* [Column note under the first subtraction panel: *Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, corresponding to the orders."]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1640	45	4984	89	8328
2	1716	46	5060	90	8404
3	1792	47	5136	91	8480
4	1868	48	5212	92	8556
5	1944	49	5288	93	8632
6	2020	50	5364	94	8708
7	2096	51	5440	95	8784
8	2172	52	5516	96	8860
9	2248	53	5592	97	8936
10	2324	54	5668	98	9012
11	2400	55	5744	99	9088
12	2476	56	5820	100	9164
13	2552	57	5896	101	9240
14	2628	58	5972	102	9316
15	2704	59	6048	103	9392
16	2780	60	6124	104	9468
17	2856	61	6200	105	9544
18	2932	62	6276	106	9620
19	3008	63	6352	107	9696
20	3084	64	6428	108	9772
21	3160	65	6504	109	9848
22	3236	66	6580	110	9924
23	3312	67	6656	111	10000
24	3388	68	6732	112	10076
25	3464	69	6808	113	10152
26	3540	70	6884	114	10228
27	3616	71	6960	115	10304
28	3692	72	7036	116	10380
29	3768	73	7112	117	10456
30	3844	74	7188	118	10532

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3920	75	7264	119	10608
32	3996	76	7340	120	10684
33	4072	77	7416	121	10760
34	4148	78	7492	122	10836
35	4224	79	7568	123	10912
36	4300	80	7644	124	10988
37	4376	81	7720	125	11064
38	4452	82	7796	126	11140
39	4528	83	7872	127	11216
40	4604	84	7948	128	11292
41	4680	85	8024	129	11368
42	4756	86	8100	130	11444
43	4832	87	8176		
44	4908	88	8252		

Mean new moons of the year 1565. Golden Number 8.

Nouilunia media anni 1565. — Aur.num. 8.

Mean new moons of the year 1565 — Golden Number 8.

Menses [Months]	D	H	M	S
I	1	13	11	52
I	31	1	55	55
M	1	14	39	58
M	31	3	24	1
A	29	16	8	4
M	29	4	52	7
I	27	17	36	10
I	27	6	20	13
A	25	19	4	16
S	24	7	48	19
O	23	20	32	22

Menses [Months]	D	H	M	S
N	22	9	16	25
D	21	22	0	28

ORDINES. — Anni Domini. Adde. [Column note, set vertically: *Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Ordo	Adde	Ordo	Adde
1	1489	11	729
2	1413	12	653
3	1337	13	577
4	1261	14	501
5	1185	15	425
6	1109	16	349
7	1033	17	273
8	957	18	197
9	881	19	121
10	805	20	45

Ordines — Anni Subtrahe. [Column note: *Pro annis ad dextram · fit subtractio téporis, quod ordinibus respondet.*]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1641	45	4985	89	8329
2	1717	46	5061	90	8405
3	1793	47	5137	91	8481
4	1869	48	5213	92	8557
5	1945	49	5289	93	8633
6	2021	50	5365	94	8709
7	2097	51	5441	95	8785
8	2173	52	5517	96	8861
9	2249	53	5593	97	8937
10	2325	54	5669	98	9013
11	2401	55	5745	99	9089

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
12	2477	56	5821	100	9165
13	2553	57	5897	101	9241
14	2629	58	5973	102	9317
15	2705	59	6049	103	9393
16	2781	60	6125	104	9469
17	2857	61	6201	105	9545
18	2933	62	6277	106	9621
19	3009	63	6353	107	9697
20	3085	64	6429	108	9773
21	3161	65	6505	109	9849
22	3237	66	6581	110	9925
23	3313	67	6657	111	10001
24	3389	68	6733	112	10077
25	3465	69	6809	113	10153
26	3541	70	6885	114	10229
27	3617	71	6961	115	10305
28	3693	72	7037	116	10381
29	3769	73	7113	117	10457
30	3845	74	7189	118	10533
31	3921	75	7265	119	10609
32	3997	76	7341	120	10685
33	4073	77	7417	121	10761
34	4149	78	7493	122	10837
35	4225	79	7569	123	10913
36	4301	80	7645	124	10989
37	4377	81	7721	125	11065
38	4453	82	7797	126	11141
39	4529	83	7873	127	11217
40	4605	84	7949	128	11293
41	4681	85	8025	129	11369

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
42	4757	86	8101	130	11445
43	4833	87	8177		
44	4909	88	8253		

Mean new moons of the year 1566. Golden Number 9.

Nouilunia media anni 1566. — Aur.num. 9.

Mean new moons of the year 1566 — Golden Number 9.

Menses [Months]	D	H	M	S
I	20	10	44	34
F	18	23	28	37
M	20	12	12	40
A	19	0	56	43
M	18	13	40	46
I	17	2	24	49
I	16	15	8	52
A	15	3	52	55
S	13	16	36	58
O	13	5	21	1
N	11	18	5	4
D	11	6	49	7

ORDINES. — Anni Domini. Adde. [Column note, set vertically: *Pro hisce annis fit additio temporis, quod ordinibus respondet.*]

Ordo	Adde	Ordo	Adde
1	1490	11	730
2	1414	12	654
3	1338	13	578
4	1262	14	502
5	1186	15	426
6	1110	16	350

Ordo	Adde	Ordo	Adde
7	1034	17	274
8	958	18	198
9	882	19	122
10	806	20	46

Ordines — Anni Subtrahe. [Column note: *Pro annis ad dextram · fit subtractio téporis, quod ordinibus respondet.*]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1642	45	4986	89	8330
2	1718	46	5062	90	8406
3	1794	47	5138	91	8482
4	1870	48	5214	92	8558
5	1946	49	5290	93	8634
6	2022	50	5366	94	8710
7	2098	51	5442	95	8786
8	2174	52	5518	96	8862
9	2250	53	5594	97	8938
10	2326	54	5670	98	9014
11	2402	55	5746	99	9090
12	2478	56	5822	100	9166
13	2554	57	5898	101	9242
14	2630	58	5974	102	9318
15	2706	59	6050	103	9394
16	2782	60	6126	104	9470
17	2858	61	6202	105	9546
18	2934	62	6278	106	9622
19	3010	63	6354	107	9698
20	3086	64	6430	108	9774
21	3162	65	6506	109	9850
22	3238	66	6582	110	9926
23	3314	67	6[?]58	111	10002

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
24	3390	68	6734	112	10078
25	3466	69	6810	113	10154
26	3542	70	6886	114	10230
27	3618	71	6962	115	10306
28	3694	72	7038	116	10382
29	3770	73	7114	117	10458
30	3846	74	7190	118	10534
31	3922	75	7266	119	10610
32	3998	76	7342	120	10686
33	4074	77	7418	121	10762
34	4150	78	7494	122	10838
35	4226	79	7570	123	10914
36	4302	80	7646	124	10990
37	4378	81	7722	125	11066
38	4454	82	7798	126	11142
39	4530	83	7874	127	11218
40	4606	84	7950	128	11294
41	4682	85	8026	129	11370
42	4758	86	8102	130	11446
43	4834	87	8178		
44	4910	88	8254		

Mean new moons of the year 1567. Golden Number 10. (*Nouilunia media anni 1567. Aur. Num. 10.*)

Left block — years and months:

ORDINES.	Anni Domini / Adde	Menses.	D	H	M	S
1	1491	I	9	1	2	1
				9	3	1
2	1415					
3	1339	F	8	8	1	1
					7	4

ORDINES.	Anni Domini / Adde	Menses.	D	H	M	S
4	1263					
5	1187	M	9	2 1	1	1 7
6	1111					
7	1035	A	8	9	4 5	2 0
8	959					
9	883	M	7	2 2	2 9	2 3
10	807					
11	731	I	6	1 1	1 3	2 6
12	655					
13	579	I	5	2 3	5 7	2 9
14	503					
15	427	A	4	1 2	4 1	3 2
16	351					
17	275	S	3	1	2 5	3 5
18	199					
19	123	O	2	1 4	9	3 8
20	47					
		N {	1	2	5 3	4 1
		N {	3 0	1 5	3 7	4 4
		D	3 0	4	2 1	4 7

[Margin: (foot of the Adde column, set vertically) For these years an addition of time is made, corresponding to the orders.]

[Margin: (foot of the new-moon block) For the years to the right a subtraction of time is made, corresponding to the orders.]

Subtraction panels (Ordines | Anni Subtrahe.), three panels across the page:

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1643	45	4987	89	8331
2	1719	46	5063	90	8407
3	1795	47	5139	91	8483
4	1871	48	5215	92	8559
5	1957	49	5291	93	8635
6	2023	50	5367	94	8711
7	2099	51	5443	95	8787
8	2175	52	5519	96	8863
9	2251	53	5595	97	8959
10	2327	54	5671	98	9015
11	2403	55	5747	99	9091
12	2479	56	5823	100	9167
13	2555	57	5899	101	9243
14	2631	58	5975	102	9319
15	2707	59	6051	103	9395
16	2783	60	6127	104	9471
17	2859	61	6203	105	9547
18	2935	62	6279	106	9623
19	3011	63	6355	107	9699
20	3087	64	6431	108	9775
21	3163	65	6507	109	9851
22	3239	66	6583	110	9927
23	3315	67	6659	111	10003
24	3391	68	6735	112	10079
25	3467	69	6811	113	10155
26	3543	70	6887	114	10231
27	3619	71	6963	115	10307

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
28	3695	72	7039	116	10383
29	3771	73	7115	117	10459
30	3847	74	7191	118	10535
31	3923	75	7267	119	10611
32	3999	76	7343	120	10687
33	4075	77	7419	121	10763
34	4151	78	7495	122	10839
35	4227	79	7571	123	10915
36	4303	80	7647	124	10991
37	4379	81	7723	125	11067
38	4455	82	7799	126	11143
39	4531	83	7875	127	11219
40	4607	84	7951	128	11295
41	4683	85	8027	129	11371
42	4759	86	8103	130	11447
43	4835	87	8179		
44	4911	88	8255		

Mean new moons of the year 1568. Golden Number 11. (*Nouilunia media anni 1568. Aur. Num. 11.*)

ORDINES.	Anni Domini / Adde	Menses.	D	H	M	S
1	1492	I	2 8	1 7	5	5 4
2	1416					
3	1340	F	2 7	5	4 9	5 7
4	1264					
5	1188	M	2 7	1 8	3 4	0
6	1112					
7	1036	A	2	7	1	3

ORDINES.	Anni Domini / Adde	Menses.	D	H	M	S
			6		8	
8	960					
9	884	M	2 5	2 0	2	6
10	808					
11	732	I	2 4	8	4 6	9
12	656					
13	580	I	2 3	2 1	3 0	1 2
14	504					
15	428	A	2 2	1 0	1 4	1 5
16	352					
17	276	S	2 0	2 2	5 8	1 8
18	200					
19	124	O	2 0	1 1	4 2	2 1
20	48					
		N	1 9	0	2 6	2 4
		D	1 8	1 3	1 0	2 7

[Margin: (foot of the Adde column, set vertically) For these years an addition of time is made, corresponding to the orders.]

[Margin: (foot of the new-moon block) For the years to the right a subtraction of time is made, corresponding to the orders.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1644	45	4988	89	8332
2	1720	46	5064	90	8408

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
3	1796	47	5140	91	8484
4	1872	48	5216	92	8560
5	1948	49	5292	93	8636
6	2024	50	5368	94	8712
7	2100	51	5444	95	8788
8	2176	52	5520	96	8864
9	2252	53	5596	97	8940
10	2328	54	5672	98	9016
11	2404	55	5748	99	9092
12	2480	56	5824	100	9168
13	2556	57	5900	101	9244
14	2632	58	5976	102	9320
15	2708	59	6052	103	9396
16	2784	60	6128	104	9472
17	2860	61	6204	105	9548
18	2936	62	6280	106	9624
19	3012	63	6356	107	9700
20	3088	64	6432	108	9776
21	3164	65	6508	109	9852
22	3240	66	6584	110	9928
23	3316	67	6660	111	10004
24	3392	68	6736	112	10080
25	3468	69	6812	113	10156
26	3544	70	6888	114	10232
27	3620	71	6964	115	10308
28	3696	72	7040	116	10384
29	3772	73	7116	117	10460
30	3848	74	7192	118	10536
31	3924	75	7268	119	10612
32	4000	76	7344	120	10688

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
33	4076	77	7420	121	10764
34	4152	78	7496	122	10840
35	4228	79	7572	123	10916
36	4304	80	7648	124	10992
37	4380	81	7724	125	11068
38	4456	82	7800	126	11144
39	4532	83	7876	127	11220
40	4608	84	7952	128	11296
41	4684	85	8028	129	11372
42	4760	86	8104	130	11448
43	4836	87	8180		
44	4912	88	8256		

Mean new moons of the year 1569. Golden Number 12. (*Nouilunia media anni 1569. Aur. num. 12.*)

ORDINES.	Anni Domini / Adde	Menses.	D	H	M	S
1	1493	I	1 7	1	5 4	3 1
2	1417					
3	1341	F	1 5	1 4	3 8	3 4
4	1265					
5	1189	M	1 7	3	2 2	3 7
6	1113					
7	1037	A	1 5	1 6	6	4 0
8	961					
9	885	M	1 5	4	5 0	4 3
10	809					
11	733	I	1	1	3	4

ORDINES.	Anni Domini / Adde	Menses.	D	H	M	S
			3	7	4	6
12	657					
13	581	I	1 3	6	1 8	4 9
14	505					
15	429	A	1 1	1 9	2	5 2
16	353					
17	277	S	1 0	7	4 6	5 5
18	201					
19	125	O	9	2 0	3 0	5 8
20	49					
		N	8	9	1 5	1
		D	7	2 1	5 9	4

[Margin: (foot of the Adde column, set vertically) For these years an addition of time is made, corresponding to the orders.]

[Margin: (foot of the new-moon block) For the years to the right a subtraction of time is made, corresponding to the orders.]

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1645	45	4989	89	8333
2	1721	46	5065	90	8409
3	1797	47	5141	91	8485
4	1873	48	5217	92	8561
5	1949	49	5293	93	8637
6	2025	50	5369	94	8713
7	2101	51	5445	95	8789
8	2177	52	5521	96	8865

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
9	2253	53	5597	97	8941
10	2329	54	5673	98	9017
11	2405	55	5749	99	9093
12	2481	56	5825	100	9169
13	2557	57	5901	101	9245
14	2633	58	5977	102	9321
15	2709	59	6053	103	9397
16	2785	60	6129	104	9473
17	2861	61	6205	105	9549
18	2937	62	6281	106	9625
19	3013	63	6357	107	9701
20	3089	64	6433	108	9777
21	3165	65	6509	109	9853
22	3241	66	6585	110	9929
23	3317	67	6661	111	10005
24	3393	68	6737	112	10081
25	3469	69	6813	113	10157
26	3545	70	6889	114	10233
27	3621	71	6965	115	10309
28	3697	72	7041	116	10385
29	3773	73	7117	117	10461
30	3849	74	7193	118	10537
31	3925	75	7269	119	10613
32	4001	76	7345	120	10689
33	4077	77	7421	121	10765
34	4153	78	7497	122	10841
35	4229	79	7573	123	10917
36	4305	80	7649	124	10993
37	4381	81	7725	125	11069
38	4457	82	7801	126	11145

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
39	4533	83	7877	127	11221
40	4609	84	7953	128	11297
41	4685	85	8029	129	11373
42	4761	86	8105	130	11449
43	4837	87	8181		
44	4913	88	8257		

Mean new moons of the year 1570 — Golden Number 13

Nouilunia media anni 1570. Aur. num. 13.

Addition table — Years of the Lord [Anni Domini]

ORDINES	Adde
1	1494
2	1418
3	1342
4	1266
5	1190
6	1114
7	1038
8	962
9	886
10	810
11	734
12	658
13	582
14	506
15	430
16	354
17	278
18	202
19	126

ORDINES	Adde
20	50

Side-note set vertically in this column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, corresponding to the order-numbers."

Mean new moons — Months [Menses] · D | H | M | S

Menses	D	H	M	S
I	6	10	43	9
F	4	23	27	12
M	6	12	11	15
A	5	0	55	18
M	4	13	39	21
I	3	2	23	24
I	2	15	7	27
A (braced, two lunations)	1	3	51	30
A (braced, two lunations)	30	16	35	33
S	29	5	19	36
O	28	18	3	39
N	27	6	47	42
D	26	19	31	45

Note set below this column: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, corresponding to the order-numbers."

Years to be subtracted [Anni Subtrahe.] — three panels

Ordine		Ordine		Ordine	
s	Anni Subtrahe.	s	Anni Subtrahe.	s	Anni Subtrahe.
1	1646	45	4990	89	8334
2	1722	46	5066	90	8410
3	1798	47	5142	91	8486
4	1874	48	5218	92	8562
5	1950	49	5294	93	8638

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
6	2026	50	5370	94	8714
7	2102	51	5446	95	8790
8	2178	52	5522	96	8866
9	2254	53	5598	97	8942
10	2330	54	5674	98	9018
11	2406	55	5750	99	9094
12	2482	56	5826	100	9170
13	2558	57	5902	101	9246
14	2634	58	5978	102	9322
15	2710	59	6054	103	9398
16	2786	60	6130	104	9474
17	2862	61	6206	105	9550
18	2938	62	6282	106	9626
19	3014	63	6358	107	9702
20	3090	64	6434	108	9778
21	3166	65	6510	109	9854
22	3242	66	6586	110	9930
23	3318	67	6662	111	10006
24	3394	68	6738	112	10082
25	3470	69	6814	113	10158
26	3546	70	6890	114	10234
27	3622	71	6966	115	10310
28	3698	72	7042	116	10386
29	3774	73	7118	117	10462
30	3850	74	7194	118	10538
31	3926	75	7270	119	10614
32	4002	76	7346	120	10690
33	4078	77	7422	121	10766
34	4154	78	7498	122	10842
35	4230	79	7574	123	10918

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
36	4306	80	7650	124	10994
37	4382	81	7726	125	11070
38	4458	82	7802	126	11146
39	4534	83	7878	127	11222
40	4610	84	7954	128	11298
41	4686	85	8030	129	11374
42	4762	86	8106	130	11450
43	4838	87	8182		
44	4914	88	8258		

Mean new moons of the year 1571 — Golden Number 14

Nouilunia media anni 1571. Aur. Num. 14.

Addition table — Years of the Lord [Anni Domini]

ORDINES	Adde
1	1495
2	1419
3	1343
4	1267
5	1191
6	1115
7	1039
8	963
9	887
10	811
11	735
12	659
13	583
14	507
15	431
16	355

ORDINES	Adde
17	279
18	203
19	127
20	51

Side-note set vertically in this column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, corresponding to the order-numbers."

Mean new moons — Months [Menses] · D | H | M | S

Menses	D	H	M	S
I	25	8	15	51
F	23	20	59	54
M	25	9	43	57
A	23	22	28	0
M	23	11	12	3
I	21	23	56	6
I	21	12	40	9
A	20	1	24	12
S	18	14	8	15
O	18	2	52	18
N	16	15	36	21
D	16	4	20	24

(The frame runs one further ruled row below December; it is blank.)

Note set below this column: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, corresponding to the order-numbers."

Years to be subtracted [Anni Subtrahe.] — three panels

Ordin es	Anni Subtrahe.	Ordin es	Anni Subtrahe.	Ordin es	Anni Subtrahe.
1	1648 [recte: 1647]	45	4991	89	8335
2	1723	46	5067	90	8411

Ordin es	Anni Subtrahe.	Ordin es	Anni Subtrahe.	Ordin es	Anni Subtrahe.
3	1799	47	5143	91	8487
4	1875	48	5219	92	8563
5	1951	49	5295	93	8639
6	2027	50	5371	94	8715
7	2103	51	5447	95	8791
8	2179	52	5523	96	8867
9	2255	53	5599	97	8943
10	2331	54	5675	98	9019
11	2407	55	5751	99	9095
12	2483	56	5827	100	9171
13	2559	57	5903	101	9247
14	2635	58	5979	102	9323
15	2711	59	6055	103	9399
16	2787	60	6131	104	9475
17	2863	61	6207	105	9551
18	2939	62	6283	106	9627
19	3015	63	6359	107	9703
20	3091	64	6435	108	9779
21	3167	65	6511	109	9855
22	3243	66	6587	110	9931
23	3319	67	6663	111	10007
24	3395	68	6739	112	10083
25	3471	69	6815	113	10159
26	3547	70	6891	114	10235
27	3623	71	6967	115	10311
28	3699	72	7043	116	10387
29	3775	73	7119	117	10463
30	3851	74	7195	118	10539
31	3927	75	7271	119	10615
32	4003	76	7347	120	10691

Ordines	Anni Subtrahe.	Ordines	Anni Subtrahe.	Ordines	Anni Subtrahe.
33	4079	77	7423	121	10767
34	4155	78	7499	122	10843
35	4231	79	7575	123	10919
36	4307	80	7651	124	10995
37	4383	81	7727	125	11071
38	4459	82	7803	126	11147
39	4535	83	7879	127	11223
40	4611	84	7955	128	11299
41	4687	85	8031	129	11375
42	4763	86	8107	130	11451
43	4839	87	8183		
44	4915	88	8259		

Mean new moons of the year 1572 — Golden Number 15

Nouilunia media anni 1572. Aur. Num. 15.

Addition table — Years of the Lord [Anni Domini]

ORDINES	Adde
1	1496
2	1420
3	1344
4	1268
5	1192
6	1116
7	1040
8	964
9	888
10	812
11	736
12	660
13	584

ORDINES	Adde
14	508
15	432
16	356
17	280
18	204
19	128
20	52

Side-note set vertically in this column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition of time is made, corresponding to the order-numbers."

Mean new moons — Months [Menses] · D | H | M | S

Menses	D	H	M	S
I	14	17	4	28
F	13	5	48	31
M	13	18	32	34
A	12	7	16	37
M	11	20	0	40
I	10	8	44	43
I	9	21	28	46
A	8	10	12	49
S	6	22	56	52
O	6	11	40	55
N	5	0	24	58
D	4	13	9	1

(The frame runs one further ruled row below December; it is blank.)

Note set below this column: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction of time is made, corresponding to the order-numbers."

Years to be subtracted [Anni Subtrahe.] — three panels

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1648	45	4992	89	8336
2	1724	46	5068	90	8412
3	1800	47	5144	91	8488
4	1876	48	5220	92	8564
5	1952	49	5296	93	8640
6	2028	50	5372	94	8716
7	2104	51	5448	95	8792
8	2180	52	5524	96	8868
9	2256	53	5600	97	8944
10	2332	54	5676	98	9020
11	2408	55	5752	99	9096
12	2484	56	5828	100	9172
13	2560	57	5904	101	9248
14	2636	58	5980	102	9324
15	2712	59	6056	103	9400
16	2788	60	6132	104	9476
17	2864	61	6208	105	9552
18	2940	62	6284	106	9628
19	3016	63	6360	107	9704
20	3092	64	6436	108	9780
21	3168	65	6512	109	9856
22	3244	66	6588	110	9932
23	3320	67	6664	111	10008
24	3396	68	6740	112	10084
25	3472	69	6816	113	10160
26	3548	70	6892	114	10236
27	3624	71	6968	115	10312
28	3700	72	7044	116	10388
29	3776	73	7120	117	10464
30	3852	74	7196	118	10540

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
31	3928	75	7272	119	10616
32	4004	76	7348	120	10692
33	4080	77	7424	121	10768
34	4156	78	7500	122	10844
35	4232	79	7576	123	10920
36	4308	80	7652	124	10996
37	4384	81	7728	125	11072
38	4460	82	7804	126	11148
39	4536	83	7880	127	11224
40	4612	84	7956	128	11300
41	4688	85	8032	129	11376
42	4764	86	8108	130	11452
43	4840	87	8184		
44	4916	88	8260		

Mean new moons of the year 1573 — Golden Number 16

Frame of the table on this page (a single ruled grid): at the left, an **ORDINES** column running 1–20 paired with the **Anni Domini** column headed **Adde**; then the **Menses** column of month initials; then the panel headed **Nouilunia media anni 1573.** / **Aur. num. 16.** with its four sub-columns **D** | **H** | **M** | **S**; then three further panels, each a pair of columns headed **Ordines** / **Anni Subtrahe**.

Left block — Ordines and Anni Domini (Adde)

Ordines	Adde
1	1497
2	1421
3	1345
4	1269
5	1193
6	1117
7	1041
8	965

Ordines	Adde
9	889
10	813
11	737
12	661
13	585
14	509
15	433
16	357
17	281
18	205
19	129
20	53

Note printed vertically at the foot of the Anni Domini column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition is made of the time that corresponds to the orders."

Mean new moons, 1573 (Golden Number 16)

Menses	D	H	M	S
I	3	1	53	4
F	1	14	37	10
M	3	3	21	13
A	1	16	5	16
M {	1	4	49	19
M }	30	17	33	22
I	29	6	17	25
I	28	19	1	28
A	27	7	45	31
S	25	20	29	34
O	25	9	13	37
N	23	21	57	40
D	23	10	41	43

Menses	D	H	M	S

Note printed at the foot of the Nouilunia panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction is made of the time that corresponds to the orders." (téporis is set with the tilde contraction for *temporis*.)

Right panels — Ordines / Anni Subtrahe.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1649	45	4993	89	8337
2	1725	46	5069	90	8413
3	1801	47	5145	91	8489
4	1877	48	5221	92	8565
5	1953	49	5297	93	8641
6	2029	50	5373	94	8717
7	2105	51	5449	95	8793
8	2181	52	5525	96	8869
9	2257	53	5601	97	8945
10	2333	54	5677	98	9021
11	2409	55	5753	99	9097
12	2485	56	5829	100	9173
13	2561	57	5905	101	9249
14	2637	58	5981	102	9325
15	2713	59	6057	103	9401
16	2789	60	6133	104	9477
17	2865	61	6209	105	9553
18	2941	62	6285	106	9629
19	3017	63	6361	107	9705
20	3093	64	6437	108	9781
21	3169	65	6513	109	9857
22	3245	66	6589	110	9933
23	3321	67	6665	111	10009

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
24	3397	68	6741	112	10085
25	3473	69	6817	113	10161
26	3549	70	6893	114	10237
27	3625	71	6969	115	10313
28	3701	72	7045	116	10389
29	3777	73	7121	117	10465
30	3853	74	7197	118	10541
31	3929	75	7273	119	10617
32	4005	76	7349	120	10693
33	4081	77	7425	121	10769
34	4157	78	7501	122	10845
35	4233	79	7577	123	10921
36	4309	80	7653	124	10997
37	4385	81	7729	125	11073
38	4461	82	7805	126	11149
39	4537	83	7881	127	11225
40	4613	84	7957	128	11301
41	4689	85	8033	129	11377
42	4765	86	8109	130	11453
43	4841	87	8185		
44	4917	88	8261		

Mean new moons of the year 1574 — Golden Number 17

Same frame as the preceding page.

Left block — Ordines and Anni Domini (Adde)

Ordines	Adde
1	1498
2	1422
3	1346
4	1270

Ordines	Adde
5	1194
6	1118
7	1042
8	966
9	890
10	814
11	738
12	662
13	586
14	510
15	434
16	358
17	282
18	206
19	130
20	54

Note printed vertically at the foot of the Anni Domini column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition is made of the time that corresponds to the orders."

Mean new moons, 1574 (Golden Number 17)

Menses	D	H	M	S
I	21	23	25	49
F	20	12	9	52
M	22	0	53	55
A	20	13	37	58
M	20	2	22	1
I	18	15	6	4
I	18	3	50	7
A	16	16	34	10
S	15	5	18	13
O	14	18	2	16

Menses	D	H	M	S
N	13	6	46	19
D	12	19	30	22

Note printed at the foot of the Nouilunia panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction is made of the time that corresponds to the orders."

Right panels — Ordines / Anni Subtrahe.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1650	45	4994	89	8338
2	1726	46	5070	90	8414
3	1802	47	5146	91	8490
4	1878	48	5222	92	8566
5	1954	49	5298	93	8642
6	2030	50	5374	94	8718
7	2106	51	5450	95	8794
8	2182	52	5526	96	8870
9	2258	53	5602	97	8946
10	2334	54	5678	98	9022
11	2410	55	5754	99	9098
12	2486	56	5830	100	9174
13	2562	57	5906	101	9250
14	2638	58	5982	102	9326
15	2714	59	6058	103	9402
16	2790	60	6134	104	9478
17	2866	61	6210	105	9554
18	2942	62	6286	106	9630
19	3018	63	6362	107	9706
20	3094	64	6438	108	9782
21	3170	65	6514	109	9858
22	3246	66	6590	110	9934

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
23	3322	67	6666	111	10010
24	3398	68	6742	112	10086
25	3474	69	6818	113	10162
26	3550	70	6894	114	10238
27	3626	71	6970	115	10314
28	3702	72	7046	116	10390
29	3778	73	7122	117	10466
30	3854	74	7198	118	10542
31	3930	75	7274	119	10618
32	4006	76	7350	120	10694
33	4082	77	7426	121	10770
34	4158	78	7502	122	10846
35	4234	79	7578	123	10922
36	4310	80	7654	124	10998
37	4386	81	7730	125	11074
38	4462	82	7806	126	11150
39	4538	83	7882	127	11226
40	4614	84	7958	128	11302
41	4690	85	8034	129	11378
42	4766	86	8110	130	11454
43	4842	87	8186		
44	4918	88	8262		

Mean new moons of the year 1575 — Golden Number 18

Same frame as the two preceding pages; here the panel head is set **Aur.Num. 18.** (with no space after Aur.).

Left block — Ordines and Anni Domini (Adde)

Ordines	Adde
1	1499
2	1423

Ordines	Adde
3	1347
4	1271
5	1195
6	1119
7	1043
8	967
9	891
10	815
11	739
12	663
13	587
14	511
15	435
16	359
17	283
18	207
19	131
20	55

Note printed vertically at the foot of the Anni Domini column: *Pro hisce annis fit additio temporis, quod ordinibus respondet.* — "For these years an addition is made of the time that corresponds to the orders."

Mean new moons, 1575 (Golden Number 18)

Menses	D	H	M	S
I	11	8	14	26
F	9	20	58	29
M	11	9	42	32
A	9	22	26	35
M	9	11	10	38
I	7	23	54	41
I	7	12	38	44
A	6	1	22	47

Menses	D	H	M	S
S	4	14	6	50
O	4	2	50	53
N	2	15	34	56
D {	2	4	18	59
D }	31	17	3	2

Note printed at the foot of the Nouilunia panel: *Pro annis ad dextram fit subtractio téporis, quod ordinibus respondet.* — "For the years to the right a subtraction is made of the time that corresponds to the orders."

Right panels — Ordines / Anni Subtrahe.

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1651	45	4995	89	8339
2	1727	46	5071	90	8415
3	1803	47	5147	91	8491
4	1879	48	5223	92	8567
5	1955	49	5299	93	8643
6	2031	50	5375	94	8719
7	2107	51	5451	95	8795
8	2183	52	5527	96	8871
9	2259	53	5603	97	8947
10	2335	54	5679	98	9023
11	2411	55	5755	99	9099
12	2487	56	5831	100	9175
13	2563	57	5907	101	9251
14	2639	58	5983	102	9327
15	2715	59	6059	103	9403
16	2791	60	6135	104	9479
17	2867	61	6211	105	9555
18	2943	62	6287	106	9631
19	3019	63	6363	107	9707

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
20	3095	64	6439	108	9783
21	3171	65	6515	109	9859
22	3247	66	6591	110	9935
23	3323	67	6667	111	10011
24	3399	68	6743	112	10087
25	3475	69	6819	113	10163
26	3551	70	6895	114	10239
27	3627	71	6971	115	10315
28	3703	72	7047	116	10391
29	3779	73	7123	117	10467
30	3855	74	7199	118	10543
31	3931	75	7275	119	10619
32	4007	76	7351	120	10695
33	4083	77	7427	121	10771
34	4159	78	7503	122	10847
35	4235	79	7579	123	10923
36	4311	80	7655	124	10999
37	4387	81	7731	125	11075
38	4463	82	7807	126	11151
39	4539	83	7883	127	11227
40	4615	84	7959	128	11303
41	4691	85	8035	129	11379
42	4767	86	8111	130	11455
43	4843	87	8187		
44	4919	88	8263		

Table. The final full-page *Nouilunia media* year-table of Caput XIII: the mean new moons of the year 1576, Golden Number 19 — the last year of the nineteen-year cycle and the last year of the table series. The page carries, at the left, the twenty-row ORDINES / Anni Domini – Adde panel (the additive orders), then the months with the mean new moon in days, hours, minutes and seconds, and at the right three Ordines / Anni Subtrahe. panels running from order 1 to order 130.

Column heads as printed: ORDINES. | Anni Domini | Menses. | Nouilunia media anni
1576. / Aur.Num. 19. | Ordines / Anni Subtrahe. (×3).

Left panel — additive orders

ORDINES.	Anni Domini — Adde
1	1500
2	1424
3	1348
4	1272
5	1196
6	1120
7	1044
8	968
9	892
10	816
11	740
12	664
13	588
14	512
15	436
16	360
17	284
18	208
19	132
20	56

Foot of the panel, set vertically: Pro hisce annis fit additio temporis, quod
ordinibus respondet. — "For these years the addition of the time corresponding
to the orders is made."

Mean new moons of the year 1576 (Golden Number 19)

Menses.	D	H	M	S
I	30	5	47	8
F	28	18	31	11

Menses.	D	H	M	S
M	29	7	15	14
A	27	19	59	17
M	27	8	43	20
I	25	21	27	23
I	25	10	11	26
A	23	22	55	29
S	22	11	39	32
O	22	0	23	35
N	20	13	7	38
D	20	1	51	41

Note beneath this panel: Pro annis ad dextram fit subtractio temporis, quod ordinibus respondet. — "For the years at the right the subtraction of the time corresponding to the orders is made."

Right-hand panels — subtractive orders (*Ordines / Anni Subtrahe.*)

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
1	1652	45	4996	89	8340
2	1728	46	5072	90	8416
3	1804	47	5148	91	8492
4	1880	48	5224	92	8568
5	1956	49	5300	93	8644
6	2032	50	5376	94	8720
7	2108	51	5452	95	8796
8	2184	52	5528	96	8872
9	2260	53	5604	97	8948
10	2336	54	5680	98	9024
11	2412	55	5756	99	9100
12	2488	56	5832	100	9176
13	2564	57	5908	101	9252
14	2640	58	5984	102	9328
15	2716	59	6060	103	9404

Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.	Ordine s	Anni Subtrahe.
16	2792	60	6136	104	9480
17	2868	61	6212	105	9556
18	2944	62	6288	106	9632
19	3020	63	6364	107	9708
20	3096	64	6440	108	9784
21	3172	65	6516	109	9860
22	3248	66	6592	110	9936
23	3324	67	6668	111	10012
24	3400	68	6744	112	10088
25	3476	69	6820	113	10164
26	3552	70	6896	114	10240
27	3628	71	6972	115	10316
28	3704	72	7048	116	10392
29	3780	73	7124	117	10468
30	3856	74	7200	118	10544
31	3932	75	7276	119	10620
32	4008	76	7352	120	10696
33	4084	77	7428	121	10772
34	4160	78	7504	122	10848
35	4236	79	7580	123	10924
36	4312	80	7656	124	11000
37	4388	81	7732	125	11076
38	4464	82	7808	126	11152
39	4540	83	7884	127	11228
40	4616	84	7960	128	11304
41	4692	85	8036	129	11380
42	4768	86	8112	130	11456
43	4844	87	8188		
44	4920	88	8264		

CAPVT XIII.

Nouiluniorum, Pleniluniorumque ex præcedenti tabula supputatio.

(Computation of new moons and full moons from the preceding table.)

2 When some year is given that belongs to the 76 primary years of the preceding table — one, that is, which neither falls before the year 1501 nor after the year 1576 — the mean new moons of all the months will be found in that year exactly as they are set down. If to these you add D.14. Hor.18. Min.22. sec.2., which is the time of half of one mean lunation, you will have the mean full moons of the same months. When, however, the resulting sum exceeds the number of days in the month in question, that full moon will fall in the following month. And if you then subtract a whole lunar month from the full moon so found, or subtract half a lunar month from the new moon found, what remains will be the full moon of the same month preceding that new moon.

For example, in the year 1520, whose Epact is xj., the new moon in October fell on day 11, hour 7, min. 34, sec. 53. If you add 14 days, 18 hours, 22 minutes, ter. 2 [?], you will find the full moon in the same month, on day 26, hour 1, min. 56, sec. 55. But in February of the same year the mean new moon occurred on day 18, hour 1, min. 42, sec. 29. If, then, you add half a lunar month, you will get for the full moon day 32, hour 20, min. 4, sec. 31. And if you take away the month of February — which in that year, being bissextile, contains 29 days — you will find that that full moon fell on day 3, hour 20, min. 4, sec. 31 of March. Now if you take a lunar month, that is, D.29.H.12.M.44.sec.3., away from the full moon so found, that is, from D.32.H.20.M.4.sec.31. of March; or if you subtract half a lunar month from the aforesaid new moon of February, you will find that the full moon occurred in February, on day 3, hour 7, min. 20, sec. 27.

[Margin: *Nouilunij inuentio in quolibet mense propositi anni primarij, vna cum plenilunio.* — Finding the new moon, together with the full moon, in any month of a given primary year.]

3 If, on the other hand, the year given is later than 1576, and indeed earlier than the Gregorian correction, which was made in the year 1582 after 4 October — since all the years after 1576 down to 1582 have the order 1 written against them at the left — you must subtract from every new moon the time of order 1, which is set down in the table before the new moons, namely D.0.H.5.Min.50.sec.11. (For to the 10 seconds one second is to be added, on account of the three times 44

seconds by which they exceed half of Second 1.) What is left is then the new moon sought.

So, if the new moon of March in the year 1582 is sought, whose Epact before the correction is vj.: since this year is found alongside the year 1506, and order 1 is prefixed to it, the time of order 1, namely D.0.Hor.5.Min.50.sec.11., must be subtracted from the new moon of March which in the year 1506 fell on day 23, hour 19, min. 25, sec. 23. In this way the new moon of the year 1582 will be found to occur on day 23, hour 13, min. 35, sec. 12. And if half a lunar month is added, namely D.14. hor.18. min.22. sec.2., the mean full moon of the same month will be found at D.38. hor.7. min.57. sec.14., that is, on 7 April at hour 7, min. 57, sec. 14. If from this you subtract a lunar month of 29 days, hor. 12, min. 44, sec. 3, you will find that the full moon in March occurred before the new moon, at D.8. hor.19. min.13. sec.11. The same result is obtained if half a lunar month is taken from the new moon of March once found.

[Margin: *Nouilunij ac plenilunij inuentio in quolibet mense dati anni post 1576. vsq̃ ad correctionē Gregorianam.* — Finding the new moon and full moon in any month of a given year from 1576 down to the Gregorian correction.]

4 But if the year given falls after the correction, the days suppressed down to that time must be added. (Those suppressed days are set out in the table for the equation of the Epacts, chapter 11, near the centesimal years; and to them the 10 days removed in the year of the correction, 1582, must always be added.) Then the time of that order which is prefixed to the year in question in the neighbouring table of new moons must be subtracted, so that the new moon sought remains.

If the day of the new moon so found falls beyond the month proposed — which is almost always the case when the year given is far from the year of the correction — we shall subtract from the surplus the largest number in the table of revolutions of the new moons given above in chapter 13, and this as many times as it can be done; then a smaller one, until what is left is less than a whole lunar month. For the number remaining will indicate the new moon of the month proposed. In the centesimal years, however, which are common years, one day must be added for those new moons which fall after the place of intercalation, that is, after 24 February.

Thus, if the new moon of the month of November in the year 1582 is sought, whose Epact after the correction is xxvj.: since this year is found alongside the year 1506, and order 1 is prefixed to it, we shall add to the new moon of

November of the year 1506 — that is, to D.15.H.1.Min.17.sec.47. — the 10 days removed from that year, and we shall get D.25.H.1.min.17.sec.47. If from this number we take away the number of the first order, that is, D.0.H.5.Min.50.sec.11., we shall find that the new moon of November falls on D.24.H.19.min.27.sec.36.

[Margin: *Nouilunij, ac plenilunij inuētio post anni correctionem.* — Finding the new moon and full moon after the year of the correction.]

[Margin: *Quādo Nouilunium inuentum cadit vltra mensem propositū, quid agendum.* — What to do when the new moon found falls beyond the month proposed.]

[Margin: *Quid agendum in annis centesimis communibus.* — What to do in common centesimal years.]

Again, let the new moon of the month of April in the year 1598 be investigated, whose Epact is xxiiij. Since this year is found alongside the primary year 1522, in which the new moon of April falls on day 25, H. 9, Min. 31, sec. 55, if the 10 days removed are added, the new moon will fall on Day 35 of April, H. 9, Min. 31, sec. 55. From this, because order 1 is prefixed to the year 1598, if we subtract D.0.H.5.Min 50.Sec.11., we shall find the new moon on Day 35 of April, H.3.Min.41.sec.44., which is a day falling beyond April. So when a lunar month of 29 Days, H.12, Min.44, sec.3 has been taken away, the same new moon will fall in April on Day 5, Hor. 14, min. 57, sec. 41.

Let it also be required to investigate the new moon of the month of January in the year 1700, whose Epact is ix. This year is written next to the primary year 1548, and order 2 is prefixed to it. If, then, to the new moon of January, that is, to D.10.H.3.Min.0.sec.45., the 11 days then removed are added, that new moon will fall at D.21.H.3.M.0.sec.45. And if the time of the second order is taken away, that is, D.0.H 11.Min.40.sec.21., the same new moon will occur at D.20.H.15.M.20.sec.24.

In the same year 1700, let the new moon of March be computed. To the new moon of March under the year 1548, alongside which the year 1700 is placed — that is, to D.9.H.4.Min.28.Sec.51. — let the 11 days suppressed be added; and from the sum, D.20.H.4.Min.28.Sec.51., let the time of the second order be taken, namely D.0.H.11.Min.40.Sec.21.; and to the remainder, D.19.H.16.Min.48.Sec.30., let one day be added, because the year 1700 is a common year and the new moon found falls after 24 February. In this way you will find that the new moon of March occurs at D.20.H.16.Min.48.Sec.30.

Likewise, let it be proposed to find the new moon of the month of January in the year 11111, whose Epact is *iiij*. This year

is written next to the primary year 1535, and has the order 126 prefixed to it. To the new moon of January in the table, that is, to D.3.H.16.Min.48.sec.13., let the 82 days removed down to the year 11100 be added, so as to make D.85.H.16.Min.48.sec.13. And if the time of order 126 is taken away, namely D.30.H.15.Min.22.sec.32., there will remain D.55.H.1.Min.25.sec.41. If from this number you again subtract a whole Lunation of 29 Days, H.12, Min.44, sec.3, that new moon will fall on Day 25 of January, H.12, Min.41, sec.38 — which differs by less than 6 minutes from what we computed above in chapter 13 by means of the Epacts.

Furthermore (to give an example set before the year 1501 as well), suppose someone wishes to find the Paschal new moon in March or April of the year 325, whose Epact is * or xxx. This year is found at the left of the primary year 1541, and has the order 16 prefixed to it, to which corresponds the time D.3.H.21.Min.22.sec.52. approximately. Added to the new moon of March, which falls on Day 26, H. 13, Min. 20, sec. 18, this places that new moon on Day 30 of March, H. 10, Min. 43, sec. 10 — which is the Paschal one. And if half a lunar month of 14 Days, H.18, Min.22, sec.2 is added, the Paschal full moon will fall on Day 45 of March, that is, on Day 14 of April, H.5, M.5, Sec.12. This differs from what we computed in chapter 13 by the Epacts by a little more than half of one minute, namely by 42 seconds.

Lastly, let it be proposed to investigate the Paschal new moon in March or April of the year 11456, which is the last in the preceding table of new moons and has the order 130 prefixed to it. The Golden Number of that year is 19, and the Epact *vj.*, which places the Paschal new moon on 25 March and the fourteenth Moon [*xiiij.*] on 7 April. The year proposed is found alongside the last year of the preceding table, 1576, where the new moon of March falls on D.29. Hor.7. min.15. sec.14. If the 84 days removed down to that time are added, the result will be D.113. Hor.7. Min.15. sec.14. Then, when the time of 31 Days, Hor.14, Min.43, sec.15, which corresponds to order 130, has been subtracted, the same new moon will be found to fall on day 81 of March, H.16, Min.31, sec.59. If from this the time of two Lunations is again subtracted, that is, D.59.H.1.Min.28.sec.6., the same new moon will fall on Day 22 of March, H.15, Min.3, sec.53.

Now if it should ever happen that the time of some order cannot be subtracted from the new moon, the days of the preceding month must be added; the new moon will then fall in that preceding month, and if you add a lunar month to it,

the new moon of the month proposed will emerge. Suppose, for instance, that the new moon of March in the year 9151 is sought, as it would be if the year had not been corrected. Since that year is found alongside the primary year 1551 and has the order 100, to which are due D.24.H.7.Min.37.sec.53. — a time which cannot be subtracted from the new moon of March, D.6, H.19, Min.38, sec.48 — we shall add the 28 days of February, since the year is a common one, so as to make D.34.H.19.Min.38.Sec.48. Then, when the time of order 100 has been subtracted, the new moon will fall in February at D.10.H.12.Min.0.Sec.55. And if a lunar month is added, the new moon will fall in March at D.12, Hor. 0, min.44, sec.58 — that is, in February at D.40, Hor.0, Min.44, Sec.58. But if you add the 67 days removed down to the year proposed, that new moon will fall, after the correction, on Day 79 of March, H.0, Min.24 [?], sec.58 — that is, once March and April have been taken away, on Day 18 of May, H.0, Min.24 [?], Sec.58. Or, when D.59.H.1.Min.28.Sec.6. have been subtracted — the time, that is, of two Lunations — on Day 19 of March, H.23, Min.16, Sec.52.

CAPVT XV.

De triginta Calendarijs Aureorum numerorum, respondentibus triginta lineis tabulæ Epactarum expansæ.

(On the thirty Calendars of Golden Numbers, answering to the thirty lines of the expanded table of Epacts.)

1 It is now time to set out those thirty Calendars of Golden Numbers which, in chapter 9, Num. 14, and chapter 12, Num. 18, we said would be necessary if the Golden Number were to be retained in the Calendar — one being brought into use at one period and another at another, as the rise or fall of the Lunations required; just as in the new Gregorian Calendar now one line of Epacts and now another is used in the expanded table to indicate the new moons. Accordingly we have drawn from our Cycle of Epacts thirty nineteen-year Cycles of Golden Numbers, in which the whole reckoning of the Lunar year according to the use of the Church consists — so that they stand in place of the 30 Calendars which we said would have to be drawn up if the new moons were to be sought in the Calendar by Golden Numbers rather than by Epacts. And this, as we see, was the Church's constant practice down to the Gregorian correction.

2 Now this is the method by which the Golden Numbers are extracted from the Epacts, that is, distributed among the 30 Calendars. Take in hand whichever line of the expanded table of Epacts you please, and note the letter of the alphabet prefixed to it, so that it may be known from the table of equation in which

century the Epacts of that line are in use. Then observe carefully the days of the months in the new Gregorian Calendar against which the nineteen Epacts of the line taken from the expanded table are written: these are precisely the days on which the new moons fall in the century in which the Epacts of that line are in use. For if opposite those same days of the months the nineteen Golden Numbers are written which, at the head of the expanded table, correspond to those nineteen Epacts, the Calendar with Golden Numbers will be complete — the one to be used in the same century as the line of Epacts taken; that is, the Golden Numbers concurring with the Epacts in that century will have been extracted from the Cycle of Epacts.

For example: if a Calendar with Golden Numbers is to be made up for the century in which the first line of Epacts, having the capital letter P prefixed to it, is in use, then the Golden Number 3, answering to the Epact *, is to be written opposite the first day of January and the last of January; likewise opposite the first and the last day of March; and also opposite 29 April; 29 May; 27 June; 25 August; 24 September; 23 October; 22 November; and 21 December — these being of course the days on which, in the Gre-

[Margin: *Qua ratione aurei numeri ex Epactis excerpantur, vt in Calendario quouis seculo inscribantur.* — By what method the Golden Numbers are extracted from the Epacts, so that they may be entered in the Calendar for any century.]

gorian Calendar the Epact * is written. In the same way the Golden Number 4, which in that same first line answers to the Epact xj, is to be written against those days of the months on which the Epact xj is seen to be entered — that is, against 20 January; 18 February; 20 March; 18 April; 18 May; 16 June; 16 July; 14 August; 14 September; 12 October; 11 November; and 10 December. And so with the rest.

You will see that this has been observed in the thirty Calendars that follow, if you carefully compare their Golden Numbers with the Epacts set down on the left-hand side against the expanded table of Epacts. For you will find that in each month of the year the Golden Numbers are set down in thirty ways entirely different from one another, since in most cases any given Golden Number occupies now one day and now another, exactly as the equation of the Moon [aequatio Lunae] requires. It is for this purpose that at the head of the months we have placed precisely the same letters of the alphabet that we prefixed to the thirty lines of Epacts in the expanded table: so that it may be known which arrangement of the Golden Numbers — that is, which Calendar of Golden Numbers (for every arrangement of the Golden Numbers constitutes one Calendar) — is to be taken into use at this or that period. On the left-hand side too

the Epacts are set out just as we arranged them in the new Calendar, together with the Dominical Letters, the Kalends, Nones, Ides, and the days of the months.

But here now are the thirty Calendars, with the thirty different arrangements of the Golden Numbers we have spoken of.

Sequuntur triginta Calendaria Aureorum numerorum, triginta lineis tabulæ Epactarum expansæ respondentia. — There follow the thirty Calendars of the Golden Numbers, answering to the thirty lines of the expanded table of Epacts.

TRIGINTA CALENDARIA AVREORVM NVMERORVM — *Thirty Calendars of the Golden Numbers*

I A N V A R I V S. — *January*

Column-group headings: *Literæ triginta linearum (Letters of the thirty lines)* over P | N | M | H | G | F | E; beneath them *AVREI NVMERI. (Golden Numbers)*.

Epact æ	Lit. Dñical.	Dies Mensis	P	N	M	H	G	F	E
*	A	CAL.	1 iii	xiiii		vi	xvii		ix
xxix	b	iiii	2	iii	xiii		vi	xvii	
xxviii	c	iii	3 xi		iii	xiii		vi	xvii
xxvii	d	Prid.	4	xi		iii	xiii		vi
xxvi	e	NON.	5 xix		xi		iii	xiii	
xxv	f	viii	6 viii	xix		xi		iii	xiii
xxiiii	g	vii	7	viii	xix		xi		iii
xxiii	A	vi	8 xvi		viii	xix		xi	
xxii	b	v	9 v	xvi		viii	xix		xi
xxi	c	iiii	1	v	xvi		viii	xix	
			0						
xx	d	iii	1 xiii		v	xvi		viii	xix
			1						
xix	e	Prid.	1 ii	xiii		v	xvi		viii
			2						
xviii	f	IDIB.	1	ii	xiii		v	xvi	
			3						
xvii	g	xix	1 x		ii	xiii		v	xvi

Epact æ	Lit. Dñical.	Dies Mensis	P	N	M	H	G	F	E
			4						
xvi	A	xviii	1	x		ii	xiii		v
			5						
xv	b	xvii	1 xvii		x		ii	xiii	
			6 i						
xiiii	c	xvi	1 vii	xvii		x		ii	xiii
			7 i						
xiii	d	xv	1 vii	xvii		x			ii
			8 i						
xii	e	xiiii	1 xv		vii	xvii		x	
			9 i						
xi	f	xiii	2 iiii	xv		vii	xvii		x
			0 i						
x	g	xii	2 iiii	xv		vii	xvii		
			1 i						
ix	A	xi	2 xii		iiii	xv		vii	xvii
			2 i						i
viii	b	x	2 i	xii		iiii	xv		vii
			3 i						
vii	c	ix	2 i	xii		iiii	xv		
			4 i						
vi	d	viii	2 ix		i	xii		iiii	xv
			5 i						
v	e	vii	2 ix		i	xii			iiii
			6 i						
iiii	f	vi	2 xvii		ix		i	xii	
			7 i						
iii	g	v	2 vi	xvii		ix		i	xii
			8 i						
ii	A	iiii	2 vi	xvii		ix			i
			9 i						
i	b	iii	3 xiiii		vi	xvii		ix	
			0 i						

Epact		Dies							
æ	Lit. Dñical.	Mensis	P	N	M	H	G	F	E
*	c	Prid.	3 iii	xiii		vi	xvii		ix
			1						

[Margin: 25 — printed in Arabic figures outside the left rule, against the row whose Epact is **xxv** (day 6).]

TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA. —
answering to the thirty lines of the expanded table of Epacts

I A N V A R I V S.—*January*

Column-group headings: Tabulæ Epactarum expansæ. (*Of the expanded table of Epacts*) over D | C | B | A | u | t | r | r; beneath them AVREI NUMERI. (*Golden Numbers*).

| Epactæ | Lit. Dñical. | Dies Mensis | D | C | B | A | u | t | f | r |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | * | A | 1 | | j | xij | | iiij | xv | | vij | |
xxix | b | 2 | ix | | j | xij | | iiij | xv | | xxviij | c | 3 | | ix | | j | xij | | iiij | xv
| | xxvij | d | 4 | xvij | | ix | | j | xij | | iiij | | xxvj | e | 5 | vj | xvij | | ix | | j |
xij | | | xxv | f | 6 | | vj | xvij | | ix | | j | xij | | xxiij | g | 7 | xiiij | | vj | xvij |
| ix | | j | | xxiiij | A | 8 | iij | xiiij | | vj | xvij | | ix | | | xxiij | b | 9 | | iij | xiiij
| | vj | xvij | | ix | | xxj | c | 10 | xj | | iij | xiiij | | vj | xvij | | | xx | d | 11 | |
xj | | iij | xiiij | | vj | xvij | | xix | e | 12 | xix | | xj | | iij | xiiij | | vj | | xviiij | f
| 13 | viij | xix | | xj | | iij | xiiij | | xvij | g | 14 | | viij | xix | | xj | | iij | xiiij
| | xvj | A | 15 | xvj | | viij | xix | | xj | | iij | | xv | b | 16 | v | xvj | | viij | xix
| | xj | | | xiiij | c | 17 | | v | xvj | | viij | xix | | xj | | xiiij | d | 18 | xiiij | | v |
xvj | | viij | xix | | | xij | e | 19 | ij | xiiij | | v | xvj | | viij | xix | | xj | f | 20 | |
ij | xiiij | | v | xvj | | viij | | x | g | 21 | x | | ij | xiiij | | v | xvj | | | ix | A | 22 | |
x | | ij | xiiij | | v | xvj | | viij | b | 23 | xviiij | | x | | ij | xiiij | | v | | vij | c | 24 |
vij | xviiij | | x | | ij | xiiij | | | vj | d | 25 | | vij | xviiij | | x | | ij | xiiij | | v | e |
26 | xv | | vij | xviiij | | x | | ij | | iiij | f | 27 | iiij | xv | | vij | xviiij | | x | | | iiij
| g | 28 | | iiij | xv | | vij | xvij[?] | | x | | ij | A | 29 | xij | | iiij | xv | | vij |
xviiij | | | j | b | 30 | j | xij | | iiij | xv | | vij | xviiij | | * | c | 31 | | j | xij | | iiij |
xv | | vij |

[Margin: 25 — printed in Arabic figures outside the left rule, against the row whose Epact is **xxv** (day 6).]

TRIGINTA CALENDARIA AVREORVM NVMERORVM

I A N V A R I V S.

Table headings, left to right: Epactæ | Lit.Dñical. (Dominical Letter) | (Roman-calendar day) | Dies Mensis (Day of the month) | then, under the spanning head Literæ triginta linearum ("Letters of the thirty lines"), the seven index letters q p n m l k i, and beneath them the spanning head AVREI NVMERI ("Golden Numbers").

Epac tæ	Lit. Dñical.	(Roman calendar)	Dies Mensis	Literæ triginta linearum						
				q	p	n	m	l	k	i
*	A	CAL.	1	xv iii		x		ii	xii i	
xxix	b	iiii	2	vii	xv iii		x		ii	xii i
xxvii i	c	iii	3		vii	xv iii		x		ii
xxvii	d	Prid.	4	xv		vii	xv iii		x	
xxvi	e	NON.	5	iiii	xv		vii	xvi ii		x
xxv	f	viii	6		iiii	xv		vii	xv iii	
xxiii i	g	vii	7	xii		iiii	xv		vii	xvi ii
xxiii	A	vi	8	i	xii		iiii	xv		vii
xxii	b	v	9		i	xii		iiii	xv	
xxi	c	iiii	10	ix		i	xii		iiii	xv
xx	d	iii	11		ix		i	xii		iiii
xix	e	Prid.	12	xv ii		ix		i	xii	
xviii	f	IDIB.	13	vi	xv ii		ix		i	xii
xvii	g	xix	14		vi	xv ii		ix		i

Epac tæ	Lit. Dñical.	(Roman calendar)	Dies Mensis	q	p	n	m	l	k	i
xvi	A	xviii	15	xii ii		vi	xv ii		ix	
xv	b	xvii	16	iii	xii ii		vi	xvi i		ix
xiiii	c	xvi	17		iii	xii ii		vi	xv ii	
xiii	d	xv	18	xi		iii	xii ii		vi	xvi i
xii	e	xiiii	19		xi		iii	xii ii		vi
xi	f	xiii	20	xi x		xi		iii	xii ii	
x	g	xii	21	vii i	xi x		xi		iii	xii ii
ix	A	xi	22		vii i	xi x		xi		iii
viii	b	x	23	xv i		vii i	xi x		xi	
vii	c	ix	24	v	xv i		vii i	xix		xi
vi	d	viii	25		v	xv i		vii i	xi x	
v	e	vii	26	xii i		v	xv i		vii i	xix
iiii	f	vi	27	ii	xii i		v	xvi		vii i
iii	g	v	28		ii	xii i		v	xv i	
ii	A	iiii	29	x		ii	xii i		v	xvi
i	b	iii	30		x		ii	xii i		v
*	c	Prid.	31	xv		x		ii	xii	

Epactæ	Lit. Dñical.	(Roman calendar)	Dies Mensis	q	p	n	m	l	k	i
				iii					i	

[Margin: 25 — set in Arabic figures outside the left rule of the frame, against the row whose Epact is **xxv** (day 6).]

TRIGINTA LINEIS TA-BVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.

I A N V A R I V S.

Table headings, left to right: Epactæ | Lit.Dñical. | Dies Mensis | then, under the spanning head tabulæ Epactarum expansæ ("of the expanded table of Epacts"), the eight index letters h g f e d c b a, and beneath them the spanning head AVREI NVMERI.

There is no Roman-calendar column on this page.

Epactæ	Lit. Dñical.	Dies Mensis	h	g	f	e	d	c	b	a
*	A	1	v	xvj		viiij	xix		xj	
xxix	b	2		v	xvj		viiij	xix		xj
xxviiij	c	3	xiiij		v	xvj		viiij	xix	
xxvij	d	4	ij	xiiij		v	xvj		viiij	xix
xxvj	e	5		ij	xiiij		v	xvj		viiij
xxv	f	6	x		ij	xiiij		v	xvj	
xxiiiij	g	7		x		ij	xiiij		v	xvj
xxiiij	A	8	xviiij		x		ij	xiiij		v
			j							
xxij	b	9	vij	xviiij		x		ij	xiiij	
				j						
xxj	c	10		vij	xviiij		x		ij	xiiij
					j					
xx	d	11	xv		vij	xviiij		x		ij
						j				
xix	e	12	iiiij	xv		vij	xviiij		x	
							j			

Epact æ	Lit. Dñical.	Dies Mensis	h	g	f	e	d	c	b	a
xviiij	f	13		iiij	xv		vij	xvii j		x
xviij	g	14	xij		iiij	xv		vij	xvii j	
xvj	A	15	j	xij		iiij	xv		vij	xvii j
xv	b	16		j	xii		iiij	xv		vij
xiiiij	c	17	ix		j	xij		iiij	xv	
xiiij	d	18		ix		j	xij		iiij	xv
xij	e	19	xvij		ix		j	xij		iiij
xj	f	20	vj	xvij		ix		j	xij	
x	g	21		vj	xvij		ix		j	xij
ix	A	22	xiiiij		vj	xvij		ix		j
viiij	b	23	iiij	xiiiij		vj	xvij		ix	
vij	c	24		iiij	xiiiij		vj	xvij		ix
vj	d	25	xj		iiij	xiiiij		vj	xvij	
v	e	26		xj		iiij	xiiiij		vj	xvij
iiij	f	27	xix		xj		iiij	xiiiij		vj
iiij	g	28	viiij	xix		xj		iiij	xiiiij	
ij	A	29		viiij	xix		xj		iiij	xiiiij
j	b	30	xvj		viiij	xix		xj		iiij
*	c	31	v	xvj		viiij	xix		xj	

[Margin: 25 — set in Arabic figures outside the left rule of the frame, against the row whose Epact is **xxv** (day 6).]

TRIGINTA CALENDARIA AVREORVM NVMERORVM

FEBRUARIVS.

Table headings, left to right: Epactæ | Lit.Dñical. | (Roman-calendar day) | Dies Mensis | then, under Literæ triginta linearum, the seven index letters P N M H G F E — all **capitals** on this page — and beneath them AVREI NVMERI.

Epac tæ	Lit. Dñical.	(Roman calendar)	Dies Mensis	P	N	M	H	G	F	E
xxix	d	CAL.	1		iii	xii ii		vi	xv ii	
xxvii i	e	iiii	2	xi		iii	xii ii		vi	xvi i
xxvii	f	iii	3		xi		iii	xii ii		vi
xxvi	g	Prid.	4	xi x	xi x	xi		iii	xii ii	xii ii
xxiii i	A	NON.	5	vii i	vii i	xi x	xi	xi	iii	iii
xxiii	b	viii	6	xv i		vii i	xi x		xi	
xxii	c	vii	7	v	xv i		vii i	xix		xi
xxi	d	vi	8		v	xv i		vii i	xi x	
xx	e	v	9	xii i		v	xv i		vii i	xix
xix	f	iiii	10	ii	xii i		v	xvi		vii i
xviii	g	iii	11		ii	xii i		v	xv i	
xvii	A	Prid.	12	x		ii	xii i		v	xvi
xvi	b	IDIB.	13		x		ii	xii i		v
xv	c	xvi	14	xv iii		x		ii	xii i	
xiiii	d	xv	15	vii	xv iii		x		ii	xii i
xiii	e	xiiii	16		vii	xv iii		x		ii
xii	f	xiii	17	xv		vii	xv		x	

Epac tæ	Lit. Dñical.	(Roman calendar)	Dies Mensis	P	N	M	H	G	F	E
							iii			
xi	g	xii	18	iiii	xv		vii	xvi		x
							ii			
x	A	xi	19		iiii	xv		vii	xv	
									iii	
ix	b	x	20	xii		iiii	xv		vii	xvi
										ii
viii	c	ix	21	i	xii		iiii	xv		vii
vii	d	viii	22		i	xii		iiii	xv	
vi	e	vii	23	ix		i	xii		iiii	xv
v	f	vi	24		ix		i	xii		iiii
iiii	g	v	25	xv		ix		i	xii	
				ii						
iii	A	iiii	26	vi	xv		ix		i	xii
					ii					
ii	b	iii	27		vi	xv		ix		i
						ii				
i	c	Prid.	28	xii		vi	xv		ix	
				ii			ii			

Three ruled but wholly empty rows follow day 28 inside the frame (the frame is cut to the 31-line January depth); they carry no text.

[Margin: 25 — set in Arabic figures outside the left rule, against day 4 (Epact **xxvi**).]

[Margin: xxv — set in Roman numerals outside the left rule, against day 5 (Epact **xxiii**).]

THIRTY [CALENDARS] CORRESPONDING TO THE THIRTY LINES OF THE EXPANDED TABLE OF EPACTS.

(In-frame title, verbatim: "TRIGINTA LINEIS TA- / BVLÆ EPACTARVM EXPANSÆ / RESPONDENTIA.")

FEBRVARIVS.

Column heads as printed: stub — Epactæ. | Lit. Dnical. | Dies Mensis; spanning head over the golden-number block — tabulæ Epactarum expansæ, then the index-letter row | D | C | B | A | u | t | r | r |, then AVREI NVMERI. (Golden Numbers).

Epact æ	Lit. Dnical.	Dies Mensis	D	C	B	A	u	t	f	r
xxix	d	1	ix		j	xij		iiiij	xv	
xxviiij	e	2		ix		j	xij		iiiij	xv
xxvij	f	3	xvij		ix		j	xij		iiiij
xxvj	g	4	vj	xvij	xvij	ix		j	xij	xij
xxiiiij	A	5	xiiiij	vj	vj	xvij	ix	ix	j	j
xxiiij	b	6	iiij	xiiiij		vj	xvij		ix	
xxij	c	7		iiij	xiiiij		vj	xvij		ix
xxj	d	8	xj		iiij	xiiiij		vj	xvij	
xx	e	9		xj		iiij	xiiiij		vj	xvij
xix	f	10	xix		xj		iiij	xiiiij		vj
xviiij	g	11	viiij	xix		xj		iiij	xiiiij	
xvij	A	12		viiij	xix		xj		iiij	xiiiij
xvj	b	13	xvj		viiij	xix		xj		ij
xv	c	14	v	xvj		viiij	xix		xj	
xiiiij	d	15		v	xvj		viiij	xix		xj
xiiij	e	16	xiiij		v	xvj		viiij	xix	
xij	f	17	ij	xiiij		v	xvj		viiij	xix
xj	g	18		ij	xiiij		v	xvj		viiij

Epact æ	Lit. Dnical.	Dies Mensis	D	C	B	A	u	t	f	r
x	A	19	x		ij	xij		v	xvj	
ix	b	20		x		ij	xij		v	xvj
viiij	c	21	xvii j		x		ij	xij		v
vij	d	22	vij	xvii j		x		ij	xij	
vj	e	23		vij	xvii j		x		ij	xij
v	f	24	xv		vij	xvii j		x		ij
iiiij	g	25	iiiij	xv		vij	xvii j		x	
iiij	A	26		iiiij	xv		vij	xvii j		x
ij	b	27	xij		iiiij	xv		vij	xvii j	
j	c	28	j	xij		iiiij	xv		vij	xvii j

[Margin: 25 — Arabic, against day 4 (Epact **xxvj**).] [Margin: xxv — Roman, against day 5 (Epact **xxiiiij**).]

THIRTY CALENDARS OF THE GOLDEN NUMBERS

(In-frame title, verbatim: "TRIGINTA CALENDARIA AVREORVM / NVMERORVM")

FEBRVARIVS.

Column heads as printed: stub — Epactæ. | Lit. Dnical. | (unheaded Roman-calendar column) | Dies Mensis; spanning head over the golden-number block —

Literæ triginta linearum, then the index-letter row | q | p | n | m | l | k | i
|, then AVREI NVMERI (Golden Numbers).

Epac tæ	Lit. Dnical.	[Roman calendar]	Dies Mensis	q	p	n	m	l	k	i
xxix	d	CAL.	1	vii	xvi ii		x		ii	xii i
xxvii i	e	iiii	2	xv	vii	xvi ii		x		ii
xxvii	f	iii	3	iiii		vii	xvi ii		x	
xxvi	g	Prid.	4		xv	xv	vii	xvi ii	xvi ii	x
xxiiii	A	NON.	5	xii	iiii	iiii	xv	vii	vii	xvi ii
xxiii	b	viii	6	i	xii		iiii	xv		vii
xxii	c	vii	7		i	xii		iiii	xv	
xxi	d	vi	8	ix		i	xii		iiii	xv
xx	e	v	9		ix		i	xii		iiii
xix	f	iiii	10	xvi i		ix		i	xii	
xviii	g	iii	11	vi	xvi i		ix		i	xii
xvii	A	Prid.	12		vi	xvi i		ix		i
xvi	b	IDIB.	13	xii ii		vi	xvi i		ix	
xv	c	xvi	14	iii	xii ii		vi	xvi i		ix
xiiii	d	xv	15		iii	xii ii		vi	xvi i	
xiii	e	xiiii	16	xi		iii	xii ii		vi	xvi i
xii	f	xiii	17		xi		iii	xii ii		vi

Epac tæ	Lit. Dnical.	[Roman calendar]	Dies Mensis	q	p	n	m	l	k	i
xi	g	xii	18	xix		xi		iii	xii ii	
x	A	xi	19	vii i	xix		xi		iii	xii ii
ix	b	x	20		vii i	xix		xi		iii
viii	c	ix	21	xvi		vii i	xix		xi	
vii	d	viii	22	v	xvi		vii i	xix		xi
vi	e	vii	23		v	xvi		vii i	xix	
v	f	vi	24	xii i		v	xvi		vii i	xix
iiii	g	v	25	ii	xii i		v	xvi		vii i
iii	A	iiii	26		ii	xii i		v	xvi	
ii	b	iii	27	x		ii	xii i		v	xvi
i	c	Prid.	28		x		ii	xii i		v

[Margin: 25 — Arabic, against day 4 (Epact **xxvi**).] [Margin: xxv — Roman, against day 5 (Epact **xxiii**).]

THIRTY [CALENDARS] CORRESPONDING TO THE THIRTY LINES OF THE EXPANDED TABLE OF EPACTS.

(In-frame title, verbatim: "TRIGINTA LINEIS TA- / BVLÆ EPACTARVM EXPANSÆ / RESPONDENTIA.")

FEBRVARIVS.

Column heads as printed: stub — Epactæ. | Lit. Dnical. | Dies Mensis; spanning head over the golden-number block — tabulæ Epactarum expansæ, then the index-letter row | h | g | f | e | d | c | b | a |, then AVREI NVMERI. (Golden Numbers).

Epact æ	Lit. Dnical.	Dies Mensis	h	g	f	e	d	c	b	a
xxix	d	1		v	xvj		viiij	xix		xj
xxviiij	e	2	xiiij		v	xvj		viiij	xix	
xxviij	f	3	ij	xiiij		v	xvj		viiij	xix
xxvj	g	4		ij	xiiij	xiiij	v	xvj	xvj	viiij
xxiiiij	A	5	x	x	ij	ij	xiiij	v	v	xvj
xxiiij	b	6	xvii j		x		ij	xiiij		v
xxij	c	7	vij	xvii j		x		ij	xiiij	
xxj	d	8		vij	xvii j		x		ij	xiiij
xx	e	9	xv		vij	xvii j		x		ij
xix	f	10	iiiij	xv		vij	xvii j		x	
xviiij	g	11		iiiij	xv		vij	xvii j		x
xvij	A	12	xij		iiiij	xv		vij	xvii j	

Epact æ	Lit. Dñical.	Dies Mensis	h	g	f	e	d	c	b	a
xvj	b	13	j	xij		iiij	xv		vij	xvii j
xv	c	14		j	xij		iiij	xv		vij
xiiij	d	15	ix		j	xij		iiij	xv	
xiiij	e	16		ix		j	xij		iiij	xv
xij	f	17	xvij		ix		j	xij		iiij
xj	g	18	vj	xvij		ix		j	xij	
x	A	19		vj	xvij		ix		j	xij
ix	b	20	xiiij		vj	xvij		ix		j
viiij	c	21	iiij	xiiij		vj	xvij		ix	
vij	d	22		iiij	xiiij		vj	xvij		ix
vj	e	23	xj		iiij	xiiij		vj	xvij	
v	f	24		xj		iiij	xiiij		vj	xvij
iiij	g	25	xix		xj		iiij	xiiij		vj
iiij	A	26	viiij	xix		xj		iiij	xiiij	
ij	b	27		viiij	xix		xj		iiij	xiiij
j	c	28	xvj		viiij	xix		xj		iiij

[Margin: 25 — Arabic, against day 4 (Epact **xxvj**).] [Margin: xxv — Roman, against day 5 (Epact **xxiiij**).]

TRIGINTA CALENDARIA AVREORVM NVMERORVM

(Thirty Calendars of the Golden Numbers)

MARTIVS (*March*)

Column heads as printed: Epactæ (Epacts) | Lit. Dñical. (Dominical letter) | the Roman-calendar day | Dies Mensis (Day of the month); then, under the spanning head Literæ triginta linearum (Letters of the thirty lines), the seven index letters **P N M H G F E**, and beneath them AVREI NVMERI (GOLDEN NUMBERS).

[Margin: 25 — Arabic, against day 6 (Epact **xxv**).]

Epac tæ	Lit. Dñical.	(Roman day)	Dies Mensis	P	N	M	H	G	F	E
*	d	CAL.	1	iii	xiii i		vi	xvi i		ix
xxix	e	vi	2		iii	xiii i		vi	xvi i	
xxvii i	f	v	3	xi		iii	xiii i		vi	xvi i
xxvii	g	iiii	4		xi		iii	xiii i		vi
xxvi	A	iii	5	xix		xi		iii	xiii i	
xxv	b	Prid.	6	viii	xix		xi		iii	xiii i
xxiiii	c	NON.	7		viii	xix		xi		iii
xxiii	d	viii	8	xvi		viii	xix		xi	
xxii	e	vii	9	v	xvi		viii	xix		xi
xxi	f	vi	10		v	xvi		viii	xix	
xx	g	v	11	xiii		v	xvi		viii	xix
xix	A	iiii	12	ii	xiii		v	xvi		viii
xviii	b	iii	13		ii	xiii		v	xvi	
xvii	c	Prid.	14	x		ii	xiii		v	xvi
xvi	d	IDIB.	15		x		ii	xiii		v
xv	e	xvii	16	xvi ii		x		ii	xiii	
xiiii	f	xvi	17	vii	xvi ii		x		ii	xiii
xiii	g	xv	18		vii	xvi ii		x		ii
xii	A	xiiii	19	xv		vii	xvi ii		x	
xi	b	xiii	20	iiii	xv		vii	xvi ii		x

Epactæ	Lit. Dñical.	(Roman day)	Dies Mensis	P	N	M	H	G	F	E
x	c	xii	21		iiii	xv		vii	xvi ii	
ix	d	xi	22	xii		iiii	xv		vii	xvi ii
viii	e	x	23	i	xii		iiii	xv		vii
vii	f	ix	24		i	xii		iiii	xv	
vi	g	viii	25	ix		i	xii		iiii	xv
v	A	vii	26		ix		i	xii		iiii
iiii	b	vi	27	xvi i		ix		i	xii	
iii	c	v	28	vi	xvi i		ix		i	xii
ii	d	iiii	29		vi	xvi i		ix		i
i	e	iii	30	xiii i		vi	xvi i		ix	
*	f	Prid.	31	iii	xiii i		vi	xvi i		ix

TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.

(Corresponding to the thirty lines of the expanded Table of Epacts.)

MARTIVS (*March*)

Column heads as printed: Epactæ | Lit. Dñical. | Dies Mensis; then, under the spanning head Tabulæ Epactarum expansæ (of the expanded Table of Epacts), the eight index letters **D C B A u t f r**, and beneath them AVREI NVMERI. This leaf carries no Roman-calendar (Kalends/Nones/Ides) column.

[Margin: 25 — Arabic, against day 6 (Epact **xxv**).]

| Epactæ | Lit. Dñical. | Dies Mensis | D | C | B | A | u | t | f | r |
| ---|---|---|---|---|---|---|---|---|---|---|---| * | d | 1 | | j | xij | | iiij | xv | | vij | |
xxix | e | 2 | ix | | j | xij | | iiij | xv | | | xxviiij | f | 3 | | ix | | j | xij | | iiij | xv

| | xxvij | g | 4 | xvij | | ix | | j | xij | | iiij | | xxvj | A | 5 | vj | xvij | | ix | | j |
xij | | | xxv | b | 6 | | vj | xvij | | ix | | j | xij | | xxiiij | c | 7 | xiiij | | vj | xvij |
ix		j		xxiiij	d	8	iiij	xiiij		vj	xvij		ix			xxij	e	9		iiij	xiiij
vj	xvij		ix		xxj	f	10	xj		iiij	xiiij		vj	xvij			xx	g	11		xj
iiij	xiiij		vj	xvij		xix	A	12	xix		xj		iiij	xiiij		vj		xviiij	b		
13	viij	xix		xj		iiij	xiiij			xvij	c	14		viij	xix		xj		iiij	xiiij	
xvj	d	15	xvj		viij	xix		xj		iiij		xv	e	16	v	xvj		viij	xix		
xj			xiiij	f	17		v	xvj		viij	xix		xj		xiiij	g	18	xiiij		v	xvj
viij	xix			xij	A	19	ij	xiiij		v	xvj		viij	xix		xj	b	20		ij	
xiiij		v	xvj		viij		x	c	21	x		ij	xiiij		v	xvj			ix	d	22		x
ij	xiiij		v	xvj		viij	e	23	xviiij		x		ij	xiiij		v		vij	f	24	vij
xviiij		x		ij	xiiij			vj	g	25		vij	xviiij		x		ij	xiiij		v	A	26
xv		vij	xviiij		x		ij		iiij	b	27	iiij	xv		vij	xviiij		x			iiij	c
28		iiij	xv		vij	xviiij		x		ij	d	29	xij		iiij	xv		vij	xviiij		
j	e	30	j	xij		iiij	xv		vij	xviiij		*	f	31		j	xij		iiij	xv		vij

TRIGINTA CALENDARIA AVREORVM NVMERORVM

(Thirty Calendars of the Golden Numbers)

MARTIVS (March)

Column heads as printed: Epactæ | Lit. Dñical. | the Roman-calendar day | Dies Mensis; then, under Literæ triginta linearum, the seven index letters **q p n m l k i**, and beneath them AVREI NVMERI.

[Margin: 25 — Arabic, against day 6 (Epact xxv).]

Epac tæ	Lit. Dñical.	(Roman day)	Dies Mensis	q	p	n	m	l	k	i
*	d	CAL.	1	xvi ii		x		ii	xiii	
xxix	e	vi	2	vii	xvi ii		x		ii	xiii
xxvii i	f	v	3		vii	xvi ii		x		ii
xxvii	g	iiii	4	xv		vii	xvi ii		x	
xxvi	A	iii	5	iiii	xv		vii	xvi		x

Epac tæ	Lit. Dñical.	(Roman day)	Dies Mensis	q	p	n	m	l	k	i
								ii		
xxv	b	Prid.	6		iiii	xv		vii	xvi	ii
xxiiii	c	NON.	7	xii		iiii	xv		vii	xvi ii
xxiii	d	viii	8	i	xii		iiii	xv		vii
xxii	e	vii	9		i	xii		iiii	xv	
xxi	f	vi	10	ix		i	xii		iiii	xv
xx	g	v	11		ix		i	xii		iiii
xix	A	iiii	12	xvi i		ix		i	xii	
xviii	b	iii	13	vi	xvi i		ix		i	xii
xvii	c	Prid.	14		vi	xvi i		ix		i
xvi	d	IDIB.	15	xiii i		vi	xvi i		ix	
xv	e	xvii	16	iii	xiii i		vi	xvi i		ix
xiiii	f	xvi	17		iii	xiii i		vi	xvi i	
xiii	g	xv	18	xi		iii	xiii i		vi	xvi i
xii	A	xiiii	19		xi		iii	xiii i		vi
xi	b	xiii	20	xix		xi		iii	xiii i	
x	c	xii	21	viii	xix		xi		iii	xiii i
ix	d	xi	22		viii	xix		xi		iii
viii	e	x	23	xvi		viii	xix		xi	
vii	f	ix	24	v	xvi		viii	xix		xi

Epac tæ	Lit. Dñical.	(Roman day)	Dies Mensis	q	p	n	m	l	k	i
vi	g	viii	25		v	xvi		viii	xix	
v	A	vii	26	xiii		v	xvi		viii	xix
iiii	b	vi	27	ii	xiii		v	xvi		viii
iii	c	v	28		ii	xiii		v	xvi	
ii	d	iiii	29	x		ii	xiii		v	xvi
i	e	iii	30		x		ii	xiii		v
*	f	Prid.	31	xvi		x		ii	xiii	
				ii						

TRIGINTA LINEIS TA-BVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.

[The thirty lines corresponding to the expanded Table of Epacts.]

M A R T I V S. [March]

Spanning heads over the right-hand block: *tabulæ Epactarum expansæ*. [of the expanded Table of Epacts] — index letters h g f e d c b a — *A V R E I N V M E R I*. [GOLDEN NUMBERS]

Epact æ	Lit. Dñical.	Dies Menfis	h	g	f	e	d	c	b	a
*	d	1	v	xvj		viiij	xix		xj	
xxix	e	2		v	xvj		viiij	xix		xj
xxviiij	f	3	xiiij		v	xvj		viiij	xix	
xxviij	g	4	ij	xiiij		v	xvj		viiij	xix
xxvj	A	5		ij	xiiij		v	xvj		viiij
2 xxv	b	6	x		ij	xiiij		v	xvj	
5										
xxiiiij	c	7		x		ij	xiiij		v	xvj
xxiiij	d	8	xvi ij		x		ij	xiiij		v
xxij	e	9	vij	xvi ij		x		ij	xiiij	

Epact æ	Lit. Dñical.	Dies Menfis	h	g	f	e	d	c	b	a
xxj	f	10		vij	xvi ij		x		ij	xiiij
xx	g	11	xv		vij	xvi ij		x		ij
xix	A	12	iiij	xv		vij	xvi ij		x	
xviiij	b	13		iiij	xv		vij	xvi ij		x
xvij	c	14	xij		iiij	xv		vij	xvi ij	
xvj	d	15	j	xij		iiij	xv		vij	xvi ij
xv	e	16		j	xii		iiij	xv		vij
xiiij	f	17	ix		j	xij		iiij	xv	
xiiij	g	18		ix		j	xij		iiij	xv
xij	A	19	xvi j		ix		j	xij		iiij
xj	b	20	vj	xvi j		ix		j	xij	
x	c	21		vj	xvi j		ix		j	xij
ix	d	22	xiii j		vj	xvi j		ix		j
viiij	e	23	iiij	xiii j		vj	xvi j		ix	
vij	f	24		iiij	xiii j		vj	xvi j		ix
vj	g	25	xj		iiij	xiii j		vj	xvi j	
v	A	26		xj		iiij	xiii j		vj	xvi j
iiij	b	27	xix		xj		iiij	xiii j		vj

Epact æ	Lit. Dñical.	Dies Menfis	h	g	f	e	d	c	b	a
iiij	c	28	viiij	xix		xj		iiij	xiii j	
ij	d	29		viiij	xix		xj		iiij	xiii j
j	e	30	xvj		viiij	xix		xj		iiij
*	f	31	v	xvj		viiij	xix		xj	

TRIGINTA CALENDARIA AVREORVM NVMERORVM

[The thirty Calendars of the Golden Numbers.]

APRILIS. [April]

Spanning heads over the right-hand block: *Literæ triginta linearum* [The letters of the thirty lines] — index letters P N M H G F E — *A V R E I N V M E R I* [GOLDEN NUMBERS]

| | Epactæ | Lit. Dñical. | | Dies Menfis | P | N | M | H | G | F | E |
|---|---|---|---|---|---|---|---|---|---|---|---| | | xxix | g | CAL. | 1 | | iii | xiiii | | vi
| xvii | | | xxviii | A | iiii | 2 | xi | | iii | xiiii | | vi | xvii | | xxvii | b | iii | 3
| | xi | | iii | xiiii | | vi | | 25 | xxvi | c | Prid. | 4 | xix | xix | xi | | iii | xiiii |
xiiii | | xxv | xiiii | d | NON. | 5 | viii | viii | xix | xi | xi | iii | iii | | | xiiii | e
| viii | 6 | xvi | | viii | xix | | xi | | | xxii | f | vii | 7 | v | xvi | | viii | xix | |
xi | | | xxi | g | vi | 8 | | v | xvi | | viii | xix | | | xx | A | v | 9 | xiii | | v | xvi
| | viii | xix | | | xix | b | iiii | 10 | ii | xiii | | v | xvi | | viii | | | xviii | c | iii |
11 | | ii | xiii | | v | xvi | | | xvii | d | Prid. | 12 | x | | ii | xiii | | v | xvi | |
xvi | e | IDIB. | 13 | | x | | ii | xiii | | v | | | xv | f | xviii | 14 | xviii | | x | | ii |
xiii | | | xiiii | g | xvii | 15 | vii | xviii | | x | | ii | xiii | | | xiii | A | xvi | 16 |
| vij | xviii | | x | | ii | | | xii | b | xv | 17 | xv | | vii | xviii | | x | | | xi | c |
xiiii | 18 | iiii | xv | | vii | xviii | | x | | | x | d | xiii | 19 | | iiii | xv | | vii | xviii
| | | ix | e | xii | 20 | xii | | iiii | xv | | vii | xviii | | | viii | f | xi | 21 | i | xii |
| iiii | xv | | vii | | | vii | g | x | 22 | | i | xii | | iiii | xv | | | | vi | A | ix | 23 |
ix | | i | xii | | iiii | xv | | v | b | viii | 24 | | ix | | i | xii | | iiii | | | iiii | c | vii
| 25 | xvii | | ix | | i | xii | | | iii | d | vi | 26 | vi | xvii | | ix | | i | xii | | | ii |
e | v | 27 | | vi | xvii | | ix | | i | | | i | f | iiii | 28 | xiiii | | vi | xvii | | ix | | |
* | g | iii | 29 | iii | xiiii | | vi | xvii | | ix | | | xxix | A | Prid. | 30 | | iii | xiiii |
| | xvii | | | | | | | | | vi | | |

TRIGINTA LINEIS TA-BVLÆ EPACTARVM EXPANSÆ
RESPONDENTIA.

[The thirty lines corresponding to the expanded Table of Epacts.]

A P R I L I S. [April]

Spanning heads over the right-hand block: *Tabulæ Epactarum expansæ*. [The expanded Table of Epacts] — index letters D C B A u t r — *AVREINVMER I*. [GOLDEN NUMBERS]

| | Epactæ | Lit. Dñical. | Dies Menfis | D | C | B | A | u | t | f | r |
|---|---|---|---|---|---|---|---|---|---|---|---| | | xxix | g | 1 | ix | | j | xij | | iiij | xv
| | | xxviiij | A | 2 | | ix | | j | xij | | iiij | xv | | xxvij | b | 3 | xvij | | ix | | j
| xij | | iiij | | 25 | xxvj | c | 4 | vj | xvij | xviij | ix | | j | xij | xij | | xxv | xxiiij |
d | 5 | xiiij | vj | vj | xvij | ix | ix | j | j | | | xxiiij | e | 6 | iiij | xiiij | | vj | xvij | |
ix | | | xxij | f | 7 | | iiij | xiiij | | vj | xvij | | ix | | | xxj | g | 8 | xj | | iiij | xiiij
| | vj | xvij | | | | xx | A | 9 | | xj | | iiij | xiiij | | vj | xvij | | | xix | b | 10 | xix
| | xj | | iiij | xiiij | | vj | | | xviiij | c | 11 | viiij | xix | | xj | | iiij | xiiij | | | xvij
| d | 12 | | viiij | xix | | xj | | iiij | xiiij | | | xvj | e | 13 | xvj | | viiij | xix | | xj |
| iiij | | | xv | f | 14 | v | xvj | | viiij | xix | | xj | | | xiiij | g | 15 | | v | xvj | |
viiij | xix | | xj | | | xiiij | A | 16 | xiiij | | v | xvj | | viiij | xix | | | xij | b | 17 | ij
| xiiij | | v | xvj | | viiij | xix | | | xj | c | 18 | | ij | xiiij | | v | xvj | | viiij | | | x |
d | 19 | x | | ij | xiiij | | v | xvj | | | | ix | e | 20 | | x | | ij | xiiij | | v | xvj | | |
viiij | f | 21 | xviiij | | x | | | ij | xiiij | | v | | | vij | g | 22 | vij | xviiij | | x | | ij |
xiiij | | | vj | A | 23 | | vij | xviiij | | x | | | ij | xiiij | | | v | b | 24 | xv | | vij |
xviiij | | x | | | iiij | c | 25 | iiij | xv | | vij | xviiij | | x | | | iiij | d | 26 | |
iiij | xv | | vij | xviiij | | x | | | ij | e | 27 | xij | | iiij | xv | | vij | xviiij | | | j | f
| 28 | j | xij | | iiij | xv | | vij | xviiij | | * | g | 29 | | j | xij | | iiij | xv | | vij | |
| xxix | A | 30 | ix | | j | xij | | iiij | xv | |

Caput XV — The Thirty Golden-Number Calendars (continued)

[The three leaves of this opening continue the set of thirty golden-number calendars begun earlier in Caput XV. Each leaf carries, side by side, the same month in two equivalent presentations: the "Thirty Calendars of the Golden Numbers" (Calendaria form, headed Literæ triginta linearum and running the Roman-calendar reckoning of Kalends/Nones/Ides), and the "Thirty Lines answering to the Expanded Tables of

*Epacts" (Tabulæ form, headed Tabulæ Epactarum expansæ, without the Roman-calendar column). The thirty vertical "lines" are labelled with a fixed 30-letter sequence and split across successive leaves; this opening carries the April lines q p n m l k i and h g f e d c b a, and the opening of the May lines P N M H G F E.]**

APRIL (Calendaria form)

TRIGINTA CALENDARIA AVREORVM NVMERORVM ("Thirty Calendars of the Golden Numbers")

APRILIS ("April")

Golden-number block heading: **Literæ triginta linearum** ("Letters of the thirty lines") over columns **q | p | n | m | l | k | i**, then **AVREI NVMERI**. ("Golden Numbers").

Left-hand framework and Roman-calendar column (fully legible):

Epact	Lit. Dnical.	[Roman cal.]	Dies Mensis
xxix	g	CAL.	1
xxviii	A	iiii	2
xxvii	b	iii	3
xxvi	c	Prid.	4
xxiii	d	NON.	5
xxiii	e	viii	6
xxii	f	vii	7
xxi	g	vi	8
xx	A	v	9
xix	b	iiii	10
xviii	c	iii	11
xvii	d	Prid.	12
xvi	e	IDIB.	13
xv	f	xviii	14
xiii	g	xvii	15
xiii	A	xvi	16
xii	b	xv	17
xi	c	xiiii	18

Epact	Lit. Dnical.	[Roman cal.]	Dies Mensis
x	d	xiii	19
ix	e	xii	20
viii	f	xi	21
vii	g	x	22
vi	A	ix	23
v	b	viii	24
iiii	c	vii	25
iii	d	vi	26
ii	e	v	27
i	f	iiii	28
*	g	iii	29
xxix	A	Prid.	30

[Margin, against day 4 (epact xxvi): 25] [Margin, against day 5 (epact xxiii): **xxv**]

Golden-number grid (columns **q p n m l k i**), read cell by cell from the page. Blank cells left blank:

Day	q	p	n	m	l	k	i
1	vii	xviii		x		ii	xiii
2		vii	xviii		x		ii
3	xv		vii	xviii		x	
4	iiii	xv	xv	vii	xviii	xviii	x
5	xii	iiii	iiii	xv	vii	vii	xviii
6	i	xii		iiii	xv		vii
7		i	xii		iiii	xv	
8	ix		i	xii		iiii	xv
9		ix		i	xii		iiii
10	xvii		ix		i	xii	
11	vi	xvii		ix		i	xii
12		vi	xvii		ix		i
13	xiii		vi	xvii		ix	
14	iii	xiii		vi	xvii		ix

Day	q	p	n	m	l	k	i
15		iii	xiii		vi	xvii	
16	xi		iii	xiii		vi	xvii
17		xi		iii	xiii		vi
18	xix		xi		iii	xiii	
19	viii	xix		xi		iii	xiii
20		viii	xix		xi		iii
21	xvi		viii	xix		xi	
22	v	xvi		viii	xix		xi
23		v	xvi		viii	xix	
24	xiii		v	xvi		viii	xix
25	ii	xiii		v	xvi		viii
26		ii	xiii		v	xvi	
27	x		ii	xiii		v	xvi
28		x		ii	xiii		v
29	xviii		x		ii	xiii	
30	vii	xviii		x		ii	xiii

APRIL (Tabulae form)

TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA

("Answering to the Expanded Tables of Epacts in thirty lines")

APRILIS ("April")

Golden-number block heading: **Tabulae Epactarum expansæ**. ("The Expanded Tables of Epacts") over columns **h | g | f | e | d | c | b | a**, then **AVREI NVMERI**. ("Golden Numbers"). This form has **no** Roman-calendar column; a blank spacer column stands in its place.

Left-hand framework (fully legible):

Epact	Lit. Dnical.	Dies Mensis
xxix	g	1
xxviij	A	2
xxvij	b	3
xxvj	c	4

Epact	Lit. Dnical.	Dies Mensis
xxiiij	d	5
xxiij	e	6
xxij	f	7
xxj	g	8
xx	A	9
xix	b	10
xviiij	c	11
xviij	d	12
xvj	e	13
xv	f	14
xiiiij	g	15
xiiij	A	16
xij	b	17
xj	c	18
x	d	19
ix	e	20
viiij	f	21
vij	g	22
vj	A	23
v	b	24
iiiij	c	25
iiij	d	26
ij	e	27
j	f	28
*	g	29
xxix	A	30

[Margin, against day 4 (epact xxvj): **25**] [Margin, against day 5 (epact xxiiij): **xxv**]

Golden-number grid (columns **h g f e d c b a**), read cell by cell from the page.

Blank cells left blank:

Da y	h	g	f	e	d	c	b	a
1		v	xvj		viiij	xix		xj
2	xiiij		v	xvj		viiij	xix	
3	ij	xiiij		v	xvj		viiij	xix
4		ij	xiiij	xiiij	v	xvj	xvj	viiij
5	x	x	ij	ij	xiiij	v	v	xvj
6	xviiij		x		ij	xiiij		v
7	vij	xviiij		x		ij	xiiij	
8		vij	xviiij		x		ij	xiiij
9	xv		vij	xviiij		x		ij
10	iiiij	xv		vij	xviiij		x	
11		iiiij	xv		vij	xviiij		x
12	xij		iiiij	xv		vij	xviiij	
13	j	xij		iiiij	xv		vij	xviiij
14		j	xij		iiiij	xv		vij
15	ix		j	xij		iiiij	xv	
16		ix		j	xij		iiiij	xv
17	xvij		ix		j	xij		iiiij
18	vj	xvij		ix		j	xij	
19		vj	xvij		ix		j	xij
20	xiiiij		vj	xvij		ix		j
21	iiij	xiiiij		vj	xvij		ix	
22		iiij	xiiiij		vj	xvij		ix
23	xj		iiij	xiiiij		vj	xvij	
24		xj		iiij	xiiiij		vj	xvij
25	xix		xj		iiij	xiiiij		vj
26	viiij	xix		xj		iiij	xiiiij	
27		viiij	xix		xj		iiij	xiiiij
28	xvj		viiij	xix		xj		iiij
29	v	xvj		viiij	xix		xj	
30		v	xvj		viiij	xix		xj

MAY (Calendaria form)

TRIGINTA CALENDARIA AVREORVM NVMERORVM ("Thirty Calendars of the Golden Numbers")

MAIVS ("May")

Golden-number block heading: **Literæ triginta linearum** ("Letters of the thirty lines") over columns **P | N | M | H | G | F | E**, then **AVREI NVMERI**. ("Golden Numbers"). With Roman-calendar column (Calendaria form).

Left-hand framework and Roman-calendar column (fully legible):

Epact	Lit. Dnical.	[Roman cal.]	Dies Mensis
xxviii	b	CAL.	1
xxvii	c	vi	2
xxvi	d	v	3
xxv	e	iiii	4
xxiiii	f	iii	5
xxiii	g	Prid.	6
xxii	A	NON.	7
xxi	b	viii	8
xx	c	vii	9
xix	d	vi	10
xviii	e	v	11
xvii	f	iiii	12
xvi	g	iii	13
xv	A	Prid.	14
xiiii	b	IDIB.	15
xiii	c	xvii	16
xii	d	xvi	17
xi	e	xv	18
x	f	xiiii	19
ix	g	xiii	20
viii	A	xii	21
vii	b	xi	22

Epact	Lit. Dnical.	[Roman cal.]	Dies Mensis
vi	c	x	23
v	d	ix	24
iiii	e	viii	25
iii	f	vii	26
ii	g	vi	27
i	A	v	28
*	b	iiii	29
xxix	c	iii	30
xxviii	d	Prid.	31

[Margin, against day 4 (epact xxv): 25]

Golden-number grid (columns **P N M H G F E**), read cell by cell from the page.
Blank cells left blank:

Day	P	N	M	H	G	F	E
1	xi		iii	xiii		vi	xvii
2		xi		iii	xiii		vi
3	xix		xi		iii	xiii	
4	viii	xix		xi		iii	xiii
5		viii	xix		xi		iii
6	xvi		viii	xix		xi	
7	v	xvi		viii	xix		xi
8		v	xvi		viii	xix	
9	xiii		v	xvi		viii	xix
10	ii	xiii		v	xvi		viii
11		ii	xiii		v	xvi	
12	x		ii	xiii		v	xvi
13		x		ii	xiii		v
14	xviii		x		ii	xiii	
15	vii	xviii		x		ii	xiii
16		vii	xviii		x		ii
17	xv		vii	xviii		x	

Day	P	N	M	H	G	F	E
18	iiii	xv		vii	xviii		x
19		iiii	xv		vii	xviii	
20	xii		iiii	xv		vii	xviii
21	i	xii		iiii	xv		vii
22		i	xii		iiii	xv	
23	ix		i	xii		iiii	xv
24		ix		i	xii		iiii
25	xvii		ix		i	xii	
26	vi	xvii		ix		i	xii
27		vi	xvii		ix		i
28	xiiii		vi	xvii		ix	
29	iii	xiiii		vi	xvii		ix
30		iii	xiiii		vi	xvii	
31	xi		iii	xiiii		vi	xvii

These three leaves continue **Caput XV**, the *Thirty Golden-Number Calendars* and their corresponding *Thirty-line Expanded Epact Tables*, for the month of **May (MAIVS)**. The three leaves alternate in kind:

- p. 273 — *Thirty-line Table corresponding to the Expanded Epact Tables* (expanded-epact leaf), golden-number lines **D C B A u t f r**;
- p. 274 — *Thirty Calendars of the Golden Numbers* (Calendaria leaf, with the Roman-calendar column), golden-number lines **q p n m l k i**;
- p. 275 — *Thirty-line Table corresponding to the Expanded Epact Tables* (expanded-epact leaf), golden-number lines **h g f e d c b a**.

Each of the golden-number value columns runs the descending +8-mod-19 staircase of golden numbers, advancing one day per column across the leaf; the doubled epact of day 4 (Roman xxv, marginal Arabic 25) and the day-numbers of the Calendaria leaf serve to fix each column against its days. The expanded-epact leaves carry **j-terminal** sorts; the Calendaria leaf carries **i-terminal** sorts.

Thirty-line Table corresponding to the Expanded Epact Tables

MAIVS (May).

Spanning heads over the grid: *Tabulæ Epactarum expansæ*. ("Expanded Epact Tables.") over the golden-number line letters, and **AVREI NVMERI** ("Golden Numbers") over the value grid.

Golden-number line letters (left → right): **D | C | B | A | u | t | f | r**

Dies Menfis	Epactæ	Lit. Dñical.	D	C	B	A	u	t	f	r
1	xxviiij	b		ix		j	xij		iiij	xv
2	xxvij	c	xv ij		ix		j	xij		iiij
3	xxvj	d	vj	xv ij		ix		j	xij	
4	xxv [Margin: Arabic 25]	e		vj	xvij		ix		j	xij
5	xxiiiij	f	xii ij		vj	xv ij		ix		j
6	xxiiij	g	iiij	xii ij		vj	xv ij		ix	
7	xxij	A		iiij	xiiiij		vj	xv ij		ix
8	xxj	b	xj		iiij	xii ij		vj	xv ij	
9	xx	c		xj		iiij	xii ij		vj	xv ij
10	xix	d	xi x		xj		iiij	xii ij		vj
11	xviiij	e	vii j	xi x		xj		iiij	xii ij	
12	xvij	f		vii j	xix		xj		iiij	xii ij
13	xvj	g	xv j		viiij	xi x		xj		iiij
14	xv	A	v	xv j		vii j	xi x		xj	
15	xiiiij	b		v	xvj		vii	xi		xj

Dies Menfis	Epactæ	Lit. Dñical.	D	C	B	A	u	t	f	r
							j	x		
16	xiiij	c	xii j		v	xv j		vii j	xi x	
17	xij	d	ij	xii j		v j	xv j		vii j	xi x
18	xj	e		ij	xiiij		v j	xv j		vii j
19	x	f	x		ij	xii j		v j	xv j	
20	ix	g		x		ij j	xii j		v j	xv j
21	viiij	A	xv iiij		x		ij j	xii j		v
22	vij	b	vij	xv iiij		x		ij j	xii j	
23	vj	c		vij	xviiij		x		ij j	xii j
24	v	d	xv		vij	xv iiij		x		ij
25	iiiij	e	iiiij	xv		vij iiij	xv iiij		x	
26	iiij	f		iiiij	xv		vij iiij	xv iiij		x
27	ij	g	xij		iiiij	xv		vij iiij	xv iiij	
28	j	A	j	xij		iiiij	xv		vij iiij	xv iiij
29	*	b		j	xii [?]		iiiij	xv		vij
30	xxix	c	ix		j	xij		iiiij	xv	
31	xxviii [?]	d		ix		j	xij		iiiij	xv

Thirty Calendars of the Golden Numbers

MAIVS (May).

Spanning heads over the grid: *Literæ triginta linearum* ("The letters of the thirty lines") over the golden-number line letters, and **AVREI NVMERI** ("Golden Numbers") over the value grid.

Golden-number line letters (left → right): **q | p | n | m | l | k | i**

Dies Menfis	Epactæ	Lit. Dñical.	Kale ndar	q	p	n	m	l	k	i
1	xxviii	b	CAL.		vii	xv iii		x		ii
2	xxvii	c	vi	xv		vi i	xv iii		x	
3	xxvi	d	v	iii i	xv		vi i	xv iii		x
4	xxv [Margin: Arabic 25]	e	iiii		iiii	xv		vi i	xv iii	
5	xxiiii	f	iii	xi i		iii i	xv		vi i	xv iii
6	xxiii	g	Prid.	i	xii		iii i	xv		vi i
7	xxii	A	NON .		i	xi i		iii i	xv	
8	xxi	b	viii	ix		i	xi i		iii i	xv
9	xx	c	vii		ix		i	xi i		iii i
10	xix	d	vi	xv ii		ix		i	xi i	
11	xviii	e	v	vi	xvii		ix		i	xi i
12	xvii	f	iiii		vi	xv ii		ix		i
13	xvi	g	iii	xi		vi	xv		ix	

Dies Menfis	Epactæ	Lit. Dñical.	Kale ndar	q	p	n	m	l	k	i
				iii			ii			
14	xv	A	Prid.	iii	xiiii		vi	xv ii		ix
15	xiiii	b	IDIB.		iii	xi iii		vi	xv ii	
16	xiii	c	xvii	xi		iii	xi iii		vi	xv ii
17	xii	d	xvi		xi		iii	xi iii		vi
18	xi	e	xv	xi x		xi		iii	xi iii	
19	x	f	xiiii	vi ii	xix		xi		iii	xi iii
20	ix	g	xiii		viii	xi x		xi		iii
21	viii	A	xii	xv i		vi ii	xi x		xi	
22	vii	b	xi	v	xvi		vi ii	xi x		xi
23	vi	c	x		v	xv i		vi ii	xi x	
24	v	d	ix	xi ii		v	xv i		vi ii	xi x
25	iiii	e	viii	ii	xiii		v	xv i		vi ii
26	iii	f	vii		ii	xi ii		v	xv i	
27	ii	g	vi	x		ii	xi ii		v	xv i
28	i	A	v		x		ii	xi ii		v
29	*	b	iiii	xv iii		x		ii	xi ii	

Dies Menfis	Epactæ	Lit. Dñical.	Kale ndar	q	p	n	m	l	k	i
30	xxix	c	iii	vi i	xvii i		x		ii	xi ii
31	xxviii	d	Prid.		vij [?]	xv iii		x		ii

Thirty-line Table corresponding to the Expanded Epact Tables

MAIVS (May).

Spanning heads over the grid: *Tabulæ Epactarum expansæ*. ("Expanded Epact Tables.") over the golden-number line letters, and **AVREI NVMERI** ("Golden Numbers") over the value grid.

Golden-number line letters (left → right): **h | g | f | e | d | c | b | a**

Dies Menfis	Epactæ	Lit. Dñical.	h	g	f	e	d	c	b	a
1	xxviiij	b	xii j		v	xvj		vii j	xi x	
2	xxvij	c	ij	xii j		v	xv j		vii j	xi x
3	xxvj	d		ij	xii j		v j	xv j		vii j
4	xxv [Margin: Arabic 25]	e	x		ij	xiiij		v j	xv j	
5	xxiiiij	f		x		ij	xii j		v j	xv j
6	xxiiij	g	xv iiij		x		ij j	xii j		v
7	xxij	A	vij	xv iiij		x		ij j	xii j	
8	xxj	b		vij	xv iiij		x		ij j	xii j
9	xx	c	xv		vij	xviiij		x		ij
10	xix	d	iiiij	xv		vij	xv		x	

Dies Menfis	Epactæ	Lit. Dñical.	h	g	f	e	d	c	b	a
							iiij			
11	xviiij	e		iiiij	xv		vij	xv iiij		x
12	xviij	f	xij		iiiij	xv		vij	xv iiij	
13	xvj	g	j	xij		iiiij	xv		vij	xv iiij
14	xv	A		j	xij		iiiij	xv		vij
15	xiiiij	b	ix		j	xij		iiiij	xv	
16	xiiij	c		ix		j	xij		iiiij	xv
17	xij	d	xv ij		ix		j	xij		iiiij
18	xj	e	vj	xv ij		ix		j	xij	
19	x	f		vj	xv ij		ix		j	xij
20	ix	g	xii ij		vj	xviij		ix		j
21	viiij	A	iiij	xii ij		vj	xv ij		ix	
22	vij	b		iiij	xii ij		vj	xv ij		ix
23	vj	c	xj		iiij	xiiiij		vj	xv ij	
24	v	d		xj		iiij	xii ij		vj	xv ij
25	iiiij	e	xi x		xj		iiij	xii ij		vj
26	iiij	f	vii j	xi x		xj		iiij	xii ij	
27	ij	g		vii j	xi x		xj		iiij	xii ij
28	j	A	xv		vii	xix		xj		iiij

Dies		Lit.								
Menfis	Epactæ	Dñical.	h	g	f	e	d	c	b	a
			j		j					
29	*	b	v	xv		viij	xi		xj	
				j			x			
30	xxix	c		v	xv		vii	xi		xj
					j		j	x		
31	xxviii	d	xii		v	xvi		vii	xi	
			j			[?]		j	x	

The Thirty Golden-Number Calendars (Caput XV) — JUNE

(Chapter carried only by the running header; no Caput/Num. rubric inside the frames.)

The June (IVNIVS) section of the Thirty Golden-Number Calendars runs across four leaves. This opening covers the first three: a Calendaria leaf (columns **P N M H G F E**), a Tabulæ leaf (columns **D C B A u t f r**), and a Calendaria leaf (columns **q p n m l k i**). The fourth June leaf (columns **h g f e d c b a**) begins on the following opening.

All three June leaves share one framework — the same Epact, Dominical-letter, day-of-month, and (on the Calendaria leaves) Roman-calendar columns. The golden-number columns differ: each column is one of the thirty epact-lines. Within every column the golden numbers run the +8-mod-19 cycle down the days; across the leaf, successive columns rotate that cycle by one and shift their day-mask. The columns that carry a golden number on epact 30 (*, i.e. the days-27 line) place it on **both day 1 and day 30** — a 20-entry column; the others hold 19 entries. On this opening the doubling columns are **N, H, G, E** (leaf 1), **D, B, u, t, r** (leaf 2), and **q, n, m, k** (leaf 3): which columns double genuinely differs from leaf to leaf.

Load-bearing typography preserved: leaves 1 and 3 (Calendaria) are set **i-terminal** (viii, xviii, xiii); leaf 2 (Tabulæ) is **j-terminal** (vii, xvii, xiii, j). The doubled epact 25 is printed in two forms — Arabic **25** at the day-2 row (governing golden numbers > 11) and Roman **xxv** at the day-3 row (governing

golden numbers ≤ 11); both are shown in the Epact column below. Epact 30 is the new-Calendar asterisk *.

Leaf 1 — p. 276 (Calendaria form)

In-frame titles: TRIGINTA CALENDARIA AVREORVM NVMERORVM / IVNIVS. **Spanning**

heads: Epactæ | Lit. Diñical | Dies Mensis || Literæ triginta linearum / AVREI

NVMERI. **Golden-number columns:** P N M H G F E

Di es	Epactæ	Lit. Diñic.	Roman cal.	P	N	M	H	G	F	E
1	xxvii	e	CAL.		xi		iii	xiii i		vi
2	xxvi · 25	f	iiii	xix	xix	xi		iii	xiii i	xiii i
3	xxiii · xxv	g	iii	viii	viii	xix	xi	xi	iii	iii
4	xxiii	A	Prid.	xvi		viii	xix		xi	
5	xxii	b	NON.	v	xvi		viii	xix		xi
6	xxi	c	viii		v	xvi		viii	xix	
7	xx	d	vii	xiii		v	xvi		viii	xix
8	xix	e	vi	ii	xiii		v	xvi		viii
9	xviii	f	v		ii	xiii		v	xvi	
10	xvii	g	iiii	x		ii	xiii		v	xvi
11	xvi	A	iii		x		ii	xiii		v
12	xv	b	Prid.	xvi ii		x		ii	xiii	
13	xiiii	c	IDIB.	vii	xvi ii		x		ii	xiii
14	xiii	d	xviii		vii	xvi ii		x		ii
15	xii	e	xvii	xv		vii	xvi ii		x	
16	xi	f	xvi	iiii	xv		vii	xvi ii		x
17	x	g	xv		iiii	xv		vii	xvi ii	

Di es	Epactæ	Lit. Dñic.	Roman cal.	P	N	M	H	G	F	E
18	ix	A	xiii	xii		iii	xv		vii	xvi ii
19	viii	b	xiii	i	xii		iii	xv		vii
20	vii	c	xii		i	xii		iii	xv	
21	vi	d	xi	ix		i	xii		iii	xv
22	v	e	x		ix		i	xii		iii
23	iiii	f	ix	xvi i		ix		i	xii	
24	iii	g	viii	vi	xvi i		ix		i	xii
25	ii	A	vii		vi	xvi i		ix		i
26	i	b	vi	xiii i		vi	xvi i		ix	
27	*	c	v	iii	xiii i		vi	xvi i		ix
28	xxix	d	iiii		iii	xiii i		vi	xvi i	
29	xxviii	e	iii	xi		iii	xiii i		vi	xvi i
30	xxvii	f	Prid.		xi		iii	xiii i		vi

Entry counts: P 19, N 20, M 19, H 20, G 20, F 19, E 20 — 137 golden-number cells, all committed, 0 [numeral: ?]. Doubling columns N/H/G/E carry their epact-30 golden number on both day 1 and day 30 (N xi, H iii, G xiii, E vi).

Leaf 2 — p. 277 (Tabulæ form)

In-frame titles: TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA. / IVNIVS. **Spanning heads:** Epactæ | Lit. Diñical | Dies Mensis || Tabulæ Epactarum expansæ. / AVREI NVMERI. **Golden-number columns:** D C B A u t r (j-terminal leaf; no Roman-calendar column)

Di es	Epactæ	Lit. Dñic.	D	C	B	A	u	t	f	r
1	xxvij	e	xvi j		ix		j	xij		iiij
2	xxvj · 25	f	vj	xvi j	xvi j	ix		j	xij	xij
3	xxiiij · xxv	g	xiii j	vj	vj	xvi j	ix	ix	j	j
4	xxiij	A	iiij	xiii j		vj	xvi j		ix	
5	xxij	b		iiij	xiii j		vj	xvi j		ix
6	xxj	c	xj		iiij	xiii j		vj	xvi j	
7	xx	d		xj		iiij	xiii j		vj	xvi j
8	xix	e	xix		xj		iiij	xiii j		vj
9	xviii	f	viiij	xix		xj		iiij	xiii j	
1 0	xvij	g		viiij	xix		xj		iiij	xiii j
1 1	xvj	A	xvj		viiij	xix		xj		iiij
1 2	xv	b	v	xvj		viiij	xix		xj	
1 3	xiiiij	c		v	xvj		viiij	xix		xj
1 4	xiiij	d	xiiij		v	xvj		viiij	xix	
1 5	xij	e	ij	xiiij		v	xvj		viiij	xix
1 6	xj	f		ij	xiiij		v	xvj		viiij
1	x	g	x		ij	xiiij		v	xvj	

Di es	Epactæ	Lit. Dñic.	D	C	B	A	u	t	f	r
7										
1	ix	A		x		ij	xiiij		v	xvj
8										
1	viiij	b	xvi		x		ij	xiiij		v
9			ij							
2	vij	c	vij	xvi		x		ij	xiiij	
0				ij						
2	vj	d		vij	xvi		x		ij	xiiij
1					ij					
2	v	e	xv		vij	xvi		x		ij
2						ij				
2	iiiij	f	iiiij	xv		vij	xvi		x	
3							ij			
2	iiij	g		iiiij	xv		vij	xvi		x
4								ij		
2	ij	A	xij		iiiij	xv		vij	xvi	
5									ij	
2	j	b	j	xij		iiiij	xv		vij	xvi
6										ij
2	*	c		j	xij		iiiij	xv		vij
7										
2	xxix	d	ix		j	xij		iiiij	xv	
8										
2	xxviii [i-terminal —	e		ix		j	xij		iiiij	xv
9	wrong-sort candidate; see notes]									
3	xxvij	f	xvi		ix		j	xij		iiiij
0			j							

Entry counts: D 20, C 19, B 20, A 19, u 20, t 20, f 19, r 20 — 157 golden-number cells, all committed, 0 [numeral: ?]. Doubling columns D/B/u/t/r carry their epact-30 golden number on both day 1 and day 30 (D xvij, B ix, u j, t xij, r iiiij).

Leaf 3 — p. 278 (Calendaria form)

In-frame titles: TRIGINTA CALENDARIA AVREORVM NVMERORVM / IVNIVS. **Spanning**

heads: Epactæ | Lit. Dñical | Dies Mensis || Literæ triginta linearum / AVREI

NVMERI **Golden-number columns:** q p n m l k i (i-terminal leaf)

Di es	Epactæ	Lit. Dñic.	Roman cal.	q	p	n	m	l	k	i
1	xxvii	e	CAL.	xv		vii	xvi ii		x	
2	xxvi · 25	f	iiii	iiii	xv	xv	vii	xvi ii	xvi ii	x
3	xxiiii · xxv	g	iii	xii	iiii	iiii	xv	vii	vii	xvi ii
4	xxiii	A	Prid.	i	xii		iiii	xv		vii
5	xxii	b	NON.		i	xii		iiii	xv	
6	xxi	c	viii	ix		i	xii		iiii	xv
7	xx	d	vii		ix		i	xii		iiii
8	xix	e	vi	xvi i		ix		i	xii	
9	xviii	f	v	vi	xvi i		ix		i	xii
10	xvii	g	iiii		vi	xvi i		ix		i
11	xvi	A	iii	xiii i		vi	xvi i		ix	
12	xv	b	Prid.	iii	xiii i		vi	xvi i		ix
13	xiiii	c	IDIB.		iii	xiii i		vi	xvi i	
14	xiii	d	xviii	xi		iii	xiii i		vi	xvi i
15	xii	e	xvii		xi		iii	xiii i		vi
16	xi	f	xvi	xix		xi		iii	xiii i	

Di es	Epactæ	Lit. Dñic.	Roman cal.	q	p	n	m	l	k	i
17	x	g	xv	viii	xix		xi		iii	xiii i
18	ix	A	xiii		viii	xix		xi		iii
19	viii	b	xiii	xvi		viii	xix		xi	
20	vii	c	xii	v	xvi		viii	xix		xi
21	vi	d	xi		v	xvi		viii	xix	
22	v	e	x	xiii		v	xvi		viii	xix
23	iiii	f	ix	ii	xiii		v	xvi		viii
24	iii	g	viii		ii	xiii		v	xvi	
25	ii	A	vii	x		ii	xiii		v	xvi
26	i	b	vi		x		ii	xiii		v
27	*	c	v	xvi ii		x		ii	xiii	
28	xxix	d	iiii	vii	xvi ii	xvi ii	x		ii	xiii
29	xxviii	e	iii		vii			x		ii
30	xxvii	f	Prid.	xv		vii	xvi ii		x	

Entry counts: q 20, p 19, n 20, m 20, l 19, k 20, i 19 — 137 golden-number cells, all committed, 0 [numeral: ?]. Doubling columns q/n/m/k carry their epact-30 golden number on both day 1 and day 30 (q xv, n vii, m xviii, k x).

The Thirty Golden-Number Calendars, expanded across thirty lines to correspond to the Tables of Epacts (Caput XV, continued)

These three leaves continue the *Thirty Golden-Number Calendars (Triginta Calendaria Aureorum Numerorum)* of Caput XV. Each opening alternates two in-frame forms of the same table:

- the **Calendaria** form — headed *TRIGINTA CALENDARIA AVREORVM NVMERORVM* — which carries the Roman-calendar column (*Kalendae / Nonae / Idus*) beside the day-of-month; and
- the **Tabulæ** form — headed *TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA* ("[the calendars], expanded across thirty lines, corresponding to the Tables of Epacts") — which omits the Roman-calendar column.

The spanning heads read *Literæ triginta linearum / Tabulæ Epactarum expansæ* ("The letters of the thirty lines" / "The Tables of Epacts, expanded") over *AVREI NVMERI* ("Golden Numbers"). The month of each leaf is set as a centred rubric (*IVNIVS, IVLIVS*).

Each golden-number column (headed by one of the thirty line-letters) distributes the golden numbers I–XIX (here j ... xix) over the days of the month, with roughly one blank day in three. Down each column the entries step by eight golden-number units in the cyclic order of the epacts; the columns are phase-shifted from one another by one day, so at any given day some columns are blank. On these leaves the month's last day repeats the first day's row across the whole grid — **every** column that is inked at Dies 1 is inked with the same value at the month's last Dies, and every column blank at Dies 1 is blank there too (see the June parsing notes). There is no single "base" column carrying the doubling.

The doubled epact 25 stands on each leaf in a narrow **printed ruled column** to the left of the epact column — bounded on the left by the frame's outer rule and on the right by the epact column's rule, with short horizontal rules above and below the figure. It is part of the printed table, not a marginal annotation.

IVNIVS (June) — Tabulæ leaf (no Roman-calendar column)

Golden-number line-columns on this leaf: **h g f e d c b a** (j-terminal sorts: viij, xiiij, xviiij, iiiij, xj). The doubled epact 25 is set in the printed twin column (ruled, inside the frame border — see above), in the two-line form: Arabic **25** on the Dies-2 line and small-capital **XXV** on the Dies-3 line, while the main epact column skips 25 (xxviij, xxvj, xxiiiij). Dies 2 and Dies 3 are accordingly **union rows**, carrying adjacent duplicate golden numbers across neighbouring columns. The Dies-30 row repeats the Dies-1 row across all eight columns (h = ij, g = xiiij/xiii, e = v, d = xvij/xvi, b = viij/viii, a = xix; f and c blank at both ends).

Di es	Epact	Lit. Dñic.	h	g	f	e	d	c	b	a
1	xxvij	e	ij	xiiij		v	xvj		viiij	xix
2	xxvj [25]	f		ij	xiiij	xiiij	v	xvj	xvj	viiij
3	xxiiiij [XXV]	g	x	x	ij	ij	xiiij	v	v	xvj
4	xxiiij	A	xvii j		x		ij	xiiij		v
5	xxij	b	vij	xvii j		x		ij	xiiij	
6	xxj	c		vij	xvii j		x		ij	xiiij
7	xx	d	xv		vij	xvii j		x		ij
8	xix	e	iiiij	xv		vij	xvii j		x	
9	xviiiij	f		iiiij	xv		vij	xvii j		x
10	xvij	g	xij		iiiij	xv		vij	xvii j	
11	xvj	A	j	xij		iiiij	xv		vij	xvii j
12	xv	b		j	xij		iiiij	xv		vij
13	xiiiij	c	ix		j	xij		iiiij	xv	
14	xiiij	d		ix		j	xij		iiiij	xv
15	xij	e	xvij		ix		j	xij		iiiij
16	xj	f	vj	xvij		ix		j	xij	
17	x	g		vj	xvij		ix		j	xij
18	ix	A	xiiiij		vj	xvij		ix		j
19	viiij	b	iiij	xiiiij		vj	xvij		ix	
20	vij	c		iiij	xiiiij		vj	xvij		ix
21	vj	d	xj		iiij	xiiiij		vj	xvij	
22	v	e		xj		iiij	xiiiij		vj	xvij
23	iiiij	f	xix		xj		iiij	xiiiij		vj
24	iiij	g	viiij	xix		xj		iiij	xiiiij	

Di es	Epact	Lit. Dñic.	h	g	f	e	d	c	b	a
25	ij	A		viiij	xix		xj		iiij	xiiiij
26	j	b	xvj		viiij	xix		xj		iiij
27	*	c	v	xvj		viiij	xix		xj	
28	xxix	d		v	xvj		viiij	xix		xj
29	xxviii	e	xiiij		v	xvj		viiij	xix	
30	xxviij	f	ij	xiii		v	xvi		viii	xix

IVLIVS (July) — Calendaria leaf (with Roman-calendar column)

Golden-number line-columns on this leaf: **P N M H G F E** (capital line-letters). This Calendaria leaf uses **i-terminal** sorts throughout its golden numbers (viii, xiii, xviii, iiii, xii, xi, ii, iii). Doubled-epact marker **25** in the printed twin column (ruled, inside the frame border) at Dies 2 and at Dies 31. The Dies-31 row repeats the Dies-1 row (P = xix, M = xi, G = iii, F = xiii), with the union-row duplicates noted below.

Di es	Epact	Lit. Dñic.	Rom. cal.	P	N	M	H	G	F	E
1	xxvi	g	CAL.	xix		xi		iii	xiii	
2	xxv [25]	A	vj	viii	xix		xi		iii	xiii
3	xxiiii	b	v		viii	xix		xi		iii
4	xxiii	c	iiii	xvi		viii	xix		xi	
5	xxii	d	iii	v	xvi		viii	xix		xi
6	xxi	e	Prid.		v	xvi		viii	xix	
7	xx	f	NON.	xiii		v	xvi		viii	xix
8	xix	g	viii	ii	xiii		v	xvi		viii
9	xviii	A	vii		ii	xiii		v	xvi	
10	xvii	b	vi	x		ii	xiii		v	xvi
11	xvi	c	v		x		ii	xiii		v
12	xv	d	iiii	xvii i		x		ii	xiii	
13	xiiii	e	iii	vii	xvii		x		ii	xiii

Di es	Epact	Lit. Dñic.	Rom. cal.	P	N	M	H	G	F	E
					i					
14	xiii	f	Prid.		vii	xvii		x		ii
						i				
15	xii	g	IDIB.	xv		vii	xvii		x	
							i			
16	xi	A	xvii	iiii	xv		vii	xvii		x
								i		
17	x	b	xvi		iiii	xv		vii	xvii	
									i	
18	ix	c	xv	xii		iiii	xv		vii	xvii
										i
19	viii	d	xiiii	i	xii		iiii	xv		vij
20	vii	e	xiii		i	xii		iiii	xv	
21	vi	f	xii	ix		i	xii		iiii	xv
22	v	g	xi		ix		i	xii		iiii
23	iiii	A	x	xvii		ix		i	xii	
24	iii	b	ix	vi	xvii		ix		i	xii
25	ii	c	viii		vi	xvii		ix		i
26	i	d	vii	xiiii		vi	xvii		ix	
27	*	e	vi	iii	xiiii		vi	xvii		ix
28	xxix	f	v		iii	xiiii		vi	xvii	
29	xxviii	g	iiii	xi		iii	xiiii		vi	xvii
30	xxvii	A	iii		xi		iii	xiiii		vi
31	xxvi [25]	b	Prid.	xix	xix	xi		iii	xiiii	xiiii

IVLIVS (July) — Tabulæ leaf (no Roman-calendar column)

Golden-number line-columns on this leaf: **D C B A u t f r** (the seventh head is long-s r). This Tabulæ leaf uses **j-terminal** sorts (xvij, vj, xiiij, iiij, xj, viij). Doubled-epact marker **25** in the printed twin column (ruled, inside the frame border) at Dies 2 and Dies 31. The Dies-31 row repeats the Dies-1 row (D = vj, C = xvij, A = ix, t = j, r = xij), with the union-row duplicates noted below.

Di es	Epact	Lit. Dñic.	D	C	B	A	u	t	f	r
1	xxvj	g	vj	xvij		ix		j	xij	
2	xxv [25]	A		vj	xvij		ix		j	xij
3	xxiiij	b	xiiij		vj	xvij		ix		j
4	xxiiij	c	iiij	xiiij		vj	xvij		ix	
5	xxij	d		iiij	xiiij		vj	xvij		ix
6	xxj	e	xj		iiij	xiiij		vj	xvij	
7	xx	f		xj		iiij	xiiij		vj	xvij
8	xix	g	xix		xj		iiij	xiiij		vj
9	xviiij	A	viiij	xix		xj		iiij	xiiij	
10	xvij	b		viiij	xix		xj		iiij	xiiij
11	xvj	c	xvj		viiij	xix		xj		iiij
12	xv	d	v	xvj		viiij	xix		xj	
13	xiiij	e		v	xvj		viiij	xix		xj
14	xiiij	f	xiiij		v	xvj		viiij	xix	
15	xij	g	ij	xiiij		v	xvj		viiij	xix
16	xj	A		ij	xiiij		v	xvj		viiij
17	x	b	x		ij	xiiij		v	xvj	
18	ix	c		x		ij	xiiij		v	xvj
19	viiij	d	xviiij		x		ij	xiiij		v
20	vij	e	vij	xviiij		x		ij	xiiij	
21	vj	f		vij	xviiij		x		ij	xiiij
22	v	g	xv		vij	xviiij		x		ij
23	iiiij	A	iiiij	xv		vij	xviiij		x	
24	iiij	b		iiiij	xv		vij	xviiij		x
25	ij	c	xij		iiiij	xv		vij	xviiij	
26	j	d	j	xij		iiiij	xv		vij	xviiij
27	*	e		j	xij		iiiij	xv		vij
28	xxix	f	ix		j	xij		iiiij	xv	
29	xxviii	g		ix		j	xij		iiiij	xv
30	xxvij	a	xvij		ix		j	xij		iiiij

Di es	Epact	Lit. Dñic.	D	C	B	A	u	t	f	r
31	xxvj [25]	b	vj	xvij	xvij	ix		j	xij	xij

Caput XV — The Thirty Golden-Number Calendars (continued)

July — Calendaria (Golden Numbers), first of these two July leaves

Frame title (within the ruled border): **TRIGINTA CALENDARIA AVREORVM NVMERORVM** ("Thirty Calendars of the Golden Numbers") / **IVLIVS**.

Spanning heads over the right-hand block: **Literæ triginta linearum** ("Letters of the thirty lines") and **AVREI NVMERI** ("Golden Numbers"). The seven golden-number columns are headed, left to right, q p n m l k i.

The left framework carries the epacts, the Dominical letter (Lit. Diical.), the Roman-calendar day, and the day of the month (Dies Mensis); the golden-number lines fill the right-hand block. This is an i-terminal leaf (vii, xii, iii... set with terminal i). Blank golden cells are left blank as printed.

Epact	Do Roma		Dies							
	m	n		q	p	n	m	l	k	i
xxvi	g	CAL.	1	iiii	xv		vii	xviii		x
xxv	A	vj	2		iiii	xv		vii	xviii	
xxiiii	b	v	3	xii		iiii	xv		vii	xviii
xxiii	c	iiii	4	i	xii		iiii	xv		vij
xxii	d	iii	5		i	xii		iiii	xv	
xxi	e	Prid.	6	ix		i	xii		iiii	xv
xx	f	NON.	7		ix		i	xii		iiii
xix	g	viii	8	xvii		ix		i	xii	
xviii	A	vii	9	vi	xvii		ix		i	xii
xvii	b	vi	10		vi	xvii		ix		i
xvi	c	v	11	xiiii		vi	xvii		ix	
xv	d	iiii	12	iii	xiiii		vi	xvii		ix

Epact	Do m	Roma n	Dies	q	p	n	m	l	k	i
xiiii	e	iii	13		iii	xiiii		vi	xvii	
xiii	f	Prid.	14	xi		iii	xiiii		vi	xvii
xii	g	IDIB.	15		xi		iii	xiiii		vi
xi	A	xvii	16	xix		xi		iii	xiiii	
x	b	xvi	17	viii	xix		xi		iii	xiiii
ix	c	xv	18		viii	xix		xi		iii
viii	d	xiiii	19	xvi		viii	xix		xi	
vii	e	xiii	20	v	xvi		viii	xix		xi
vi	f	xii	21		v	xvi		viii	xix	
v	g	xi	22	xiii		v	xvi		viii	xix
iiii	A	x	23	ii	xiii		v	xvi		viii
iii	b	ix	24		ii	xiii		v	xvi	
ii	c	viii	25	x		ii	xiii		v	xvi
i	d	vii	26		x		ii	xiii		v
*	e	vi	27	xviii		x		ii	xiii	
xxix	f	v	28	vii	xviii		x		ii	xiii
xxviii	g	iiii	29		vii	xviii		x		ii
xxvii	A	iii	30	xv		vii	xviii		x	
xxvi	b	Prid.	31	iiii	xv	xv	vii	xviii	xviii	x

July — Tabulæ Epactarum expansæ, second July leaf

Frame title: **TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.** ("Corresponding to the thirty lines, the Tables of Epacts expanded.") / **IVLIVS.**

Spanning heads: **tabulæ Epactarum expansæ.** and **AVREI NVMERI.** Eight golden-number columns headed, left to right, h g f e d c b a. This is a Tabulæ leaf: no Roman-calendar column, and the sorts are j-terminal (ij, vij, xiiij...).

Epact	Do m	Dies	h	g	f	e	d	c	b	a
xxvj	g	1		ij	xiiij		v	xvj		viiij
xxv	A	2	x		ij	xiiij		v	xvj	

Epact	Do m	Dies	h	g	f	e	d	c	b	a
xxiiij	b	3		x		ij	xiiij		v	xvj
xxiiij	c	4	xviiij		x		ij	xiiij		v
xxij	d	5	vij	xviiij		x		ij	xiiij	
xxj	e	6		vij	xviiij		x		ij	xiiij
xx	f	7	xv		vij	xviiij		x		ij
xix	g	8	iiij	xv		vij	xviiij		x	
xviiij	A	9		iiij	xv		vij	xviiij		x
xvij	b	10	xij		iiij	xv		vij	xviiij	
xvj	c	11	j	xij		iiij	xv		vij	xviiij
xv	d	12		j	xij		iiij	xv		vij
xiiij	e	13	ix		j	xii		iiij	xv	
xiiij	f	14		ix		j	xij		iiij	xv
xij	g	15	xvij		ix		j	xij		iiij
xj	A	16	vj	xvij		ix		j	xij	
x	b	17		vj	xvij		ix		j	xij
ix	c	18	xiiij		vj	xvij		ix		j
viiij	d	19	iiij	xiiij		vj	xvij		ix	
vij	e	20		iiij	xiiij		vj	xvij		ix
vj	f	21	xj		iiij	xiiij		vj	xvij	
v	g	22		xj		iiij	xiiij		vj	xvij
iiij	A	23	xix		xj		iiij	xiiij		vj
iiij	b	24	viiij	xix		xj		iiij	xiiij	
ij	c	25		viiij	xix		xj		iiij	xiiij
j	d	26	xvj		viiij	xix		xj		iiij
*	e	27	v	xvj		viiij	xix		xj	
xxix	f	28		v	xvj		viiij	xix		xj
xxviii	g	29	xiiij		v	xvj		viiij	xix	
xxvij	A	30	ij	xiiij		v	xvj		viiij	xix
xxvj	b	31		ij	xiii	xiiij	v	xvj	xvj	viiij

August — Calendaria (Golden Numbers)

Frame title: **TRIGINTA CALENDARIA AVREORVM NVMERORVM / AVGVSTVS.**

Spanning heads: **Literæ triginta linearum** and **AVREI NVMERI**. Seven golden-number columns headed, left to right, P N M H G F E (capital index letters).

Calendaria leaf with Roman-calendar column; i-terminal sorts.

Epact	Do m	Roma n	Dies	P	N	M	H	G	F	E
xxiiii	c	CAL.	1	viii	viii	xix	xi	xi	iii	iii
xxiii	d	iiii	2	xvi		viii	xix		xi	
xxii	e	iii	3	v	xvi		viii	xix		xi
xxi	f	Prid.	4		v	xvi		viii	xix	
xx	g	NON.	5	xiii		v	xvi		viii	xix
xix	A	viii	6	ii	xiii		v	xvi		viii
xviii	b	vii	7		ii	xiii		v	xvi	
xvii	c	vi	8	x		ii	xiii		v	xvi
xvi	d	v	9		x		ii	xiii		v
xv	e	iiii	10	xviii		x		ii	xiii	
xiiii	f	iii	11	vii	xviii		x		ii	xiii
xiii	g	Prid.	12		vii	xviii		x		ii
xii	A	IDIB.	13	xv		vii	xviii		x	
xi	b	xix	14	iiii	xv		vii	xviii		x
x	c	xviii	15		iiii	xv		vii	xviii	
ix	d	xvii	16	xii		iiii	xv		vii	xviii
viii	e	xvi	17	i	xii		iiii	xv		vij
vii	f	xv	18		i	xii		iiii	xv	
vi	g	xiiii	19	ix		i	xii		iiii	xv
v	A	xiii	20		ix		i	xii		iiii
iiii	b	xii	21	xvii		ix		i	xii	
iii	c	xi	22	vi	xvii		ix		i	xii
ii	d	x	23		vi	xvii		ix		i
i	e	ix	24	xiiii		vi	xvii		ix	

Epact	Do m	Roma n	Dies	P	N	M	H	G	F	E
*	f	viii	25	iii	xiii		vi	xvii		ix
xxix	g	vii	26		iii	xiii		vi	xvii	
xxviii	A	vi	27	xi		iii	xiii		vi	xvii
xxvii	b	v	28		xi		iii	xiii		vi
xxvi	c	iiii	29	xix		xi		iii	xiii	
xxv	d	iii	30	viii	xix		xi		iii	xiii
xxiiii	e	Prid.	31		viii	xix		xi		iii

Caput XV. — The Thirty Golden-Number Calendars (continued): AUGUST

These three leaves continue Caput XV's parallel presentation of the golden numbers for **August (AVGVSTVS)**, alternating between the *Thirty Calendars of the Golden Numbers* (Calendaria, which carry the Roman-calendar column) and the *Thirty Lines of the Tables of Expanded Epacts* (Tabulæ, without the Roman-calendar column). The two forms are the two faces of the same reckoning — the Calendaria expressed by day of the month with its Roman-calendar date, the Tabulæ by the expanded epacts to which those lines correspond. No Caput/Num. rubric is set inside the frames; the chapter is carried only by the running header.

Each leaf tabulates thirty-one days down the page; the golden-number columns are headed by the thirty line-letters, and each column carries the same golden number one day later than the column to its left. On day 1 several adjacent columns show the same value (the doubling at the head of the month), so that row is the fullest on the leaf; the last day of the month, day 31, is **not** a repetition of day 1 — on each of these three leaves it carries only five inked values, in the columns that stand second in each day-1 pair together with the two unpaired columns.

Leaf 1 — TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.

Thirty Lines corresponding to the Tables of Expanded Epacts. — AVGVSTVS.

Spanning heads: **Epactæ** | **Lit. Dñical.** | **Dies Menfis** (framework); **tabulæ Epactarum expansæ.** over the golden columns; **AVREI NVMERI** (Golden

Numbers). Golden-number line-letters: **D · C · B · A · u · t · f · r** (Tabulæ leaf, no Roman-calendar column). Golden numerals are set **j-terminal** (xij, iij, vij, viij, xiiij, xviij, xviiij), as is proper to the Tabulæ leaves, with two cells that appear i-terminal (flagged below).

Epact	Lit. Dñic.	D ie								
		s	D	C	B	A	u	t	f	r
xxiiij [twin col.: 25]	c	1	xii ij	vj	vj	xv ij	ix	ix	j	j
xxiij	d	2	iij	xii ij		vj	xviij		ix	
xxij	e	3		iij	xii ij		vj	xviij		ix
xxj	f	4	xj		iij	xii ij		vj	xv ij	
xx	g	5		xj		iij	xiiij		vj	xvi j
xix	A	6	xi x		xj		iij	xiiij		vj
xviiij	b	7	vii j	xi x		xj		iij	xii ij	
xviij	c	8		vii j	xi x		xj		iij	xii ij
xvj	d	9	xvj		vii j	xi x		xj		iij
xv	e	1 0	v	xvj		vii j	xix		xj	
xiiij	f	1 1		v	xvj		viiij	xix		xj
xiiij	g	1 2	xii j		v	xvj		viiij	xi x	
xij	A	1 3	ij	xii j		v	xvj		vii j	xix
xj	b	1 4		ij	xii j		v	xvj		vii j

Epact	Lit. Dñic.	D ie s	D	C	B	A	u	t	f	r
x	c	1 5	x		ij	xii j		v	xvj	
ix	d	1 6		x		ij	xiiij		v	xvj
viiij	e	1 7	xv iiij		x		ij	xiii [?]		v
vij	f	1 8	vij	xv iiij		x		ij	xii j	
vj	g	1 9		vij	xv iiij		x		ij	xii j
v	A	2 0	xv		vij	xv iiij		x		ij
iiiij	b	2 1	iiiij	xv		vij	xviiij		x	
iiij	c	2 2		iiiij	xv		vij	xviiij		x
ij	d	2 3	xij		iiiij	xv		vij	xv iiij	
j	e	2 4	j	xij		iiiij	xv		vij	xvi ij
*	f	2 5		j	xij		iiiij	xv		vij
xxix	g	2 6	ix		j	xij		iiiij	xv	
xxviii	A	2 7		ix		j	xii [?]		iiiij	xv
xxvij	b	2 8	xv ij		ix		j	xij		iiiij
xxvj	c	2 9	vj	xv ij		ix		j	xij	
xxv [twin col.: 25]	d	3 0		vj	xv ij		ix		j	xij

Epact	Lit. Dñic.	D ie								
		s	D	C	B	A	u	t	f	r
xxiiij	e	3	xii		vj	xv		ix		j
		1	ij			ij				

Leaf 2 — TRIGINTA CALENDARIA AVREORVM NVMERORVM

Thirty Calendars of the Golden Numbers. — AVGVSTVS.

Framework columns **Epactæ** | **Lit. Dñical.** | **Dies Menfis**, then the Roman-calendar date column, then the golden-number columns under the spanning head **Literæ triginta linearum** / **AVREI NVMERI**. Golden-number line-letters: **q · p · n · m · l · k · i**. This is a Calendaria leaf, so it carries the Roman-calendar column, and the golden numerals are set **i-terminal** (xii, iii, vii, viii, xiii, xiiii, xvii, xviii), proper to the Calendaria leaves.

Epact	Lit. Dñic.	Rom. cal.	D ie							
			s	q	p	n	m	l	k	i
xxiiii [twin col.: xxv]	c	CAL.	1	xii	iii	iiii	xv	vii	vii	xvi ii
xxiii	d	iiii	2	i	xii		iiii	xv		vii
xxii	e	iii	3		i	xii		iiii	xv	
xxi	f	Prid.	4	ix		i	xii		iiii	xv
xx	g	NON.	5		ix		i	xii		iiii
xix	A	viii	6	xv ii		ix		i	xii	
xviii	b	vii	7	vi	xv ii		ix		i	xii
xvii	c	vi	8		vi	xv ii		ix		i
xvi	d	v	9	xii ii		vi	xv ii		ix	
xv	e	iiii	1	iii	xii		vi	xvi		ix
			0		ii			i		
xiiii	f	iii	1		iii	xii		vi	xv	
			1			ii			ii	

Epact	Lit. Dñic.	Rom. cal.	D ie	s	q	p	n	m	l	k	i
xiii	g	Prid.	1	xi			iii	xii		vi	xvi
			2					ii			i
xii	A	IDIB.	1		xi			iii	xii		vi
			3						ii		
xi	b	xix	1	xi			xi		iii	xii	
			4	x						ii	
x	c	xviii	1	vii	xi			xi		iii	xii
			5	i	x						ii
ix	d	xvii	1		vii	xi			xi		iii
			6		i	x					
viii	e	xvi	1	xv			vii	xi		xi	
			7	i			i	x			
vii	f	xv	1	v	xv			vii	xix		xi
			8		i			i			
vi	g	xiiii	1		v	xv			vii	xi	
			9			i			i	x	
v	A	xiii	2	xii			v	xv		vii	xix
			0	i				i		i	
iiii	b	xii	2	ii	xii			v	xvi		vii
			1		i						i
iii	c	xi	2		ii	xii			v	xv	
			2			i				i	
ii	d	x	2	x			ii	xii		v	xvi
			3					i			
i	e	ix	2		x			ii	xii		v
			4						i		
*	f	viii	2	xv			x		ii	xii	
			5	iii						i	
xxix	g	vii	2	vii	xv			x		ii	xii
			6		iii						i
xxviii	A	vi	2		vii	xv			x		ii
			7			iii					

Epact	Lit. Dñic.	Rom. cal.	D ie s	q	p	n	m	l	k	i
xxvii	b	v	2 8	xv		vii	xv iii		x	
xxvi	c	iiii	2 9	iiii	xv		vii	xvi ii		x
xxv [twin col.: 25]	d	iii	3 0		iiii	xv		vii	xv iii	
xxiii	e	Prid.	3 1	xii		iiii	xv		vii	xvi ii

Leaf 3 — TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.

Thirty Lines corresponding to the Tables of Expanded Epacts. — AVGVSTVS.

Framework **Epactæ** | **Lit. Dñical.** | **Dies Menfis**; golden columns under **tabulæ Epactarum expansæ.** / **AVREI NVMERI.** Golden-number line-letters: **h · g · f · e · d · c · b · a** (Tabulæ leaf, no Roman-calendar column). Golden numerals **j-terminal**, with two cells that appear i-terminal (flagged below).

Epact	Lit. Dñic.	D ie s	h	g	f	e	d	c	b	a
xxiiij [twin col.: 25]	c	1	x	x	ij	ij	xii j	v	v	xvj
xxiiij	d	2	xv iiij		x		ij	xiiij		v
xxij	e	3	vij	xv iiij		x		ij	xii j	
xxj	f	4		vij	xviiij		x		ij	xii j
xx	g	5	xv		vij	xv iiij		x		ij
xix	A	6	iiij	xv		vij	xv iiij		x	

Epact	Lit. Dñic.	D ie s	h	g	f	e	d	c	b	a
xviiij	b	7		iiij	xv		vij	xviiij		x
xviij	c	8	xij		iiij	xv		vij	xv iiij	
xvj	d	9	j	xij		iiij	xv		vij	xvi ij
xv	e	1 0		j	xij		iiij	xv		vij
xiiiij	f	1 1	ix		j	xij		iiij	xv	
xiiij	g	1 2		ix		j	xij		iiij	xv
xij	A	1 3	xv ij		ix		j	xii [?]		iiij
xj	b	1 4	vj	xv ij		ix		j	xij	
x	c	1 5		vj	xviij		ix		j	xij
ix	d	1 6	xii ij		vj	xv ij		ix		j
viiij	e	1 7	iiij	xii ij		vj	xv ij		ix	
vij	f	1 8		iiij	xiiiij		vj	xviij		ix
vj	g	1 9	xj		iiij	xii ij		vj	xv ij	
v	A	2 0		xj		iiij	xii ij		vj	xvi j
iiiij	b	2 1	xi x		xj		iiij	xiiiij		vj
iiij	c	2 2	vii j	xi x		xj		iiij	xii ij	
ij	d	2		vii	xix		xj		iiij	xii

Epact	Lit. Dñic.	D ie s	h	g	f	e	d	c	b	a
		3		j						ij
j	e	2	xvj		viiij	xi		xj		iiij
		4				x				
*	f	2	v	xvj		vii	xi		xj	
		5				j	x			
xxix	g	2		v	xvj		vii	xix		xj
		6					j			
xxviii	A	2	xii		v	xvj		viiij	xi	
		7	j						x	
xxvij	b	2	ij	xii		v	xvj		vii	xix
		8		j					j	
xxvj	c	2		ij	xiii		v	xvj		vii
		9			[?]					j
xxv [twin col.: 25]	d	3	x		ij	xii		v	xvj	
		0				j				
xxiiiij	e	3		x		ij	xii		v	xvj
		1					j			

September — Thirty Calendars of the Golden Numbers (*Triginta Calendaria aureorum numerorum*)

SEPTEMBER. (*First leaf — Calendaria, with the Roman-calendar column; index letters P N M H G F E.*)

Spanning heads within the frame: *Literæ triginta linearum* ("The letters of the thirty lines") over the golden-number block; *Aurei numeri* ("Golden Numbers") beneath the index letters.

Epact	Lit. Dñic.	[Rom. cal.]	D ie s	P	N	M	H	G	F	E
xxiii	f	CAL.	1	xv		vii	xi		xi	
				i		i	x			
xxii	g	iiii	2	v	xv		vii	xix		xi

Epact	Lit. Dñic.	[Rom. cal.]	D ie s	P	N	M	H	G	F	E
					i		i			
xxi	A	iii	3		v	xv		viii	xi	
						i			x	
xx	b	Prid.	4	xii		v	xv		vii	xi
				i			i		i	x
xix	c	NON.	5	ii	xii		v	xvi		vii
					i					i
xviii	d	viii	6		ii	xii		v	xv	
						i			i	
xvii	e	vii	7	x		ii	xii		v	xv
							i			i
xvi	f	vi	8		x		ii	xiii		v
xv	g	v	9	xv		x		ii	xii	
				iii					i	
xiiii	A	iiii	1	vii	xv		x		ii	xii
			0		iii					i
xiii	b	iii	1		vii	xv		x		ii
			1			iii				
xii	c	Prid.	1	xv		vii	xv		x	
			2				iii			
xi	d	IDIB.	1	iiii	xv		vii	xvii		x
			3					i		
x	e	xviii	1		iiii	xv		vii	xv	
			4						iii	
ix	f	xvii	1	xii		iiii	xv		vii	xv
			5							iii
viii	g	xvi	1	i	xii		iiii	xv		vii
			6							
vii	A	xv	1		i	xii		iiii	xv	
			7							
vi	b	xiiii	1	ix		i	xii		iiii	xv
			8							

Epact	Lit. Dñic.	[Rom. cal.]	D ie s	P	N	M	H	G	F	E
v	c	xiii	1 9		ix		i	xii		iii
iiii	d	xii	2 0	xv ii		ix		i	xii	
iii	e	xi	2 1	vi ii	xv		ix		i	xii
ii	f	x	2 2		vi	xv ii		ix		i
i	g	ix	2 3	xii ii		vi	xv ii		ix	
*	A	viii	2 4	iii ii	xii		vi	xvii		ix
xxix	b	vii	2 5		iii	xii ii		vi	xv ii	
xxviii	c	vi	2 6	xi		iii	xii ii		vi	xv ii
xxvii	d	v	2 7		xi		iii	xiiii		vi
xxvi [twin col.: 25]	e	iiii	2 8	xi x	xi x	xi		ii [?]	xii ii	xii ii
xxiii [twin col.: xxv]	f	iii	2 9	vii i	vii i	xi x	xi	xi	iii	iii
xxiii	g	Prid.	3 0	xv i		vii i	xi x		xi	

September — Thirty Lines of the Table of Expanded Epacts (*Triginta lineis tabulæ epactarum expansæ respondentia*)

SEPTEMBER. (Second leaf — *Tabulæ*, no Roman-calendar column; index letters *D C B A u t f r.*)

Spanning heads within the frame: *Tabulæ epactarum expansæ* ("The table of expanded epacts") over the golden-number block; *Aurei numeri* ("Golden Numbers") beneath the index letters.

Epact	Lit. Dñic.	D ie s	D	C	B	A	u	t	f	r
xxiii	f	1	ij	xii ij		vj	xvij		ix	
xxij	g	2		ij	xii ij		vj	xvi j		ix
xxj	A	3	xj		ij	xiiij		vj	xv ij	
xx	b	4		xj		ij	xiiij		vj	xvi j
xix	c	5	xi x		xj		ij	xii ij		vj
xviiij	d	6	vii j	xix		xj		ij	xii ij	
xvij	e	7		vii j	xi x		xj		ij	xii ij
xvj	f	8	xvj		vii j	xix		xj		ij
xv	g	9	v	xvj		viiij	xix		xj	
xiiij	A	1 0		v	xvj		viiij	xix		xj
xiiij	b	1 1	xii j		v	xvj		vii j	xi x	
xij	c	1 2	ij	xii j		v	xvj		vii j	xix
xj	d	1 3		ij	xii j		v	xvj		vii j
x	e	1 4	x		ij	xiiij		v	xvj	
ix	f	1 5		x		ij	xiiij		v	xvj
viiij	g	1 6	xv ij		x		ij	xii j		v
vij	A	1	vij	xvi		x		ij	xii	

Epact	Lit. Dñic.	D ie s	D	C	B	A	u	t	f	r
		7		ij					j	
vj	b	1		vij	xv		x		ij	xii
		8			ij					j
v	c	1	xv		vij	xvii		x		ij
		9				j				
iiij	d	2	iiij	xv		vij	xviiij		x	
		0								
ij	e	2		iiij	xv		vij	xvi		x
		1						ij		
ij	f	2	xij		iiij	xv		vij	xv	
		2							ij	
j	g	2	j	xij		iiij	xv		vij	xvi
		3								ij
*	A	2		j	xij		iiij	xv		vij
		4								
xxix	b	2	ix		j	xij		iiij	xv	
		5								
xxviii	c	2		ix		j	xij		iiij	xv
		6								
xxvij	d	2	xv		ix		j	xij		iiij
		7	ij							
xxvj [twin col.: 25]	e	2	vj	xvi	xv	ix		j	xij	xij
		8		j	ij					
xxiiij [twin col.: xxv]	f	2	xii	vj	vj	xvij	ix	ix	j	j
		9	ij							
xxiiij	g	3	iiij	xii		vj	xvij		ix	
		0		ij		[?]	[?]			

September — Thirty Calendars of the Golden Numbers (*Triginta Calendaria aureorum numerorum*)

SEPTEMBER. (*Third leaf — Calendaria, with the Roman-calendar column; index letters q p n m l k i.*)

Spanning heads within the frame: *Literæ triginta linearum* ("The letters of the thirty lines") over the golden-number block; *Aurei numeri* ("Golden Numbers") beneath the index letters.

Epact	Lit. Dñic.	[Rom. cal.]	D ie	s	q	p	n	m	l	k	i
xxiii	f	CAL.	1	i	xii			iiii	xv		vii
xxii	g	iiii	2		i	xii			iiii	xv	
xxi	A	iii	3	ix		i	xii			iiii	xv
xx	b	Prid.	4		ix		i	xii			iiii
xix	c	NON.	5	xv		ix		i	xii		
				ii							
xviii	d	viii	6	vi	xv		ix			i	xii
					ii						
xvii	e	vii	7		vi	xv		ix			i
						ii					
xvi	f	vi	8	xii		vi	xv			ix	
				ii			ii				
xv	g	v	9	iii	xii		vi	xv			ix
					ii			ii			
xiiii	A	iiii	1		iii	xii		vi	xv		
			0			ii			ii		
xiii	b	iii	1	xi		iii	xii		vi	xv	
			1				ii				ii
xii	c	Prid.	1		xi		iii	xii		vi	
			2					ii			
xi	d	IDIB.	1	xi		xi		iii	xii		
			3	x					ii		
x	e	xviii	1	vii	xi		xi		iii	xii	
			4	i	x					ii	
ix	f	xvii	1		vii	xi		xi		iii	
			5		i	x					
viii	g	xvi	1	xv		vii	xi			xi	
			6	i		i	x				
vii	A	xv	1	v	xv		vii	xi			xi

Epact	Lit. Dñic.	[Rom. cal.]	D ie s	q	p	n	m	l	k	i
			7		i		i	x		
vi	b	xiiii	1		v	xv		vii	xi	
			8			i		i	x	
v	c	xiii	1	xii		v	xv		vii	xi
			9	i			i		i	x
iiii	d	xii	2	ii	xii		v	xv		vii
			0		i			i		i
iii	e	xi	2		ii	xii		v	xv	
			1			i			i	
ii	f	x	2	x		ii	xii		v	xv
			2				i			i
i	g	ix	2		x		ii	xii		v
			3					i		
*	A	viii	2	xv		x		ii	xii	
			4	iii					i	
xxix	b	vii	2	vii	xv		x		ii	xii
			5		iii					i
xxviii	c	vi	2		vii	xv		x		ii
			6			iii				
xxvii	d	v	2	xv		vii	xv		x	
			7				iii			
xxvi [twin col.: 25]	e	iiii	2	iiii	xv	xv	vii	xv	xv	x
			8					iii	iii	
xxiii [twin col.: xxv]	f	iii	2	xii	iii	iiii	xv	vii	vii	xv
			9							iii
xxiii	g	Prid.	3	i	xii		iiii	xv		vii
			0							

The Thirty Calendars of the Golden Numbers — SEPTEMBER (fourth leaf)

[In-frame title:] Corresponding to the Thirty Lines of the Expanded Table of Epacts [*Triginta lineis Tabulæ Epactarum expansæ respondentia.*]

SEPTEMBER.

Spanning heads: *The Expanded Table of Epacts* [Tabulæ Epactarum expanfæ] over the golden-number columns; *Golden Numbers* [AVREI NVMERI].

This is the fourth September leaf (Tabulæ line-letters h g f e d c b a, all minuscule). September has 30 days; the day-1 golden row recurs unchanged at day 30, so five columns double — h, f, d, c, a, carrying xvij, x, ij, xij, v at both day 1 and day 30 — while g, e, and b are blank at both. Numerals are predominantly j-terminal, but the setting is not uniform: the value-28 epact is set with a plain i-terminal, xxviii, and individual golden cells in the foxed lower bands are also i-terminal (see anomaly c). All are transcribed as printed.

Epact	Lit. Dñic.	D i e s	h	g	f	e	d	c	b	a
xxiii	f	1	xv ij		x		ij	xij		v
xxij	g	2	vij	xvij		x		ij	xij	
xxj	A	3		vij	xv ij		x		ij	xii j
xx	b	4	xv		vij	xvij		x		ij
xix	c	5	iiij	xv		vij	xv ij		x	
xvij	d	6		iiij	xv		vij	xvij		x
xvij	e	7	xij		iiij	xv		vij	xvij	
xvj	f	8	j	xij		iiij	xv		vij	xv ij
xv	g	9		j	xij		iiij	xv		vij
xiiij	A	1 0	ix		j	xij		iiij	xv	
xij	b	1 1		ix		j	xij		iiii [?]	xv
xij	c	1 2	xv ij		ix		j	xij		iiij
xj	d	1	vj	xvij		ix		j	xij	

Epact	Lit. Dñic.	D i e s	h	g	f	e	d	c	b	a
		3								
x	e	1		vj	xv		ix		j	xij
		4			ij					
ix	f	1	xii		vj	xvij		ix		j
		5	ij							
viiij	g	1	iiij	xiiiij		vj	xv		ix	
		6					ij			
vij	A	1		iiij	xii		vj	xvij		ix
		7			ij					
vj	b	1	xj		iiij	xiiiij		vj	xvij	
		8								
v	c	1		xj		iiij	xii		vj	xv
		9					ij			ij
iiiij	d	2	xi		xj		iiij	xiiiij		vj
		0	x							
iiij	e	2	vii	xix		xj		iiij	xiiiij	
		1	j							
ij	f	2		viiij	xi		xj		iiij	xii
		2			x					ij
j	g	2	xv		vii	xix		xj		iiij
		3	j		j					
*	A	2	v	xvj		viiij	xi		xj	
		4					x			
xxix	b	2		v	xv		vii	xix		xj
		5			j		j			
xxviii	c	2	xii		v	xvi		viii	xix	
		6	j			[?]		[?]		
xxvij	d	2	ij	xiii		v	xv		viiij	xi
		7		[?]			j			x
xxvj [twin col.: 25]	e	2		ij	xii		v	xvj		vii
		8			j					j

Epact	Lit. Dñic.	D i e s	h	g	f	e	d	c	b	a
xxiiij [twin col.: xxv]	f	2	x		ij	xiiij		v	xvj	
xxiiij	g	3 0	xv iiij		x		ij	xiiij		v

The Thirty Calendars of the Golden Numbers — OCTOBER (first leaf)

[In-frame title:] The Thirty Calendars of the Golden Numbers [*Triginta Calendaria Aureorum Numerorum.*]

OCTOBER.

Spanning heads: *The Letters of the Thirty Lines* [Literæ triginta linearum] over the golden-number columns; *Golden Numbers* [AVREI NVMERI].

This is the first October leaf (Calendaria line-letters P N M H G F E), which carries the Roman-calendar column. October has 31 days; the last-day (31) golden row replicates the day-1 row exactly (verified by direct read of both rows), so columns P, N, H, G, and E are doubling columns — carrying v, xvi, viii, xix, xi at both day 1 and day 31 — while M and F are blank at both. Numerals on this Calendaria leaf are set i-terminal in every row read (Calendaria convention).

Epact	Lit. Dñic.	Rom. cal.	Di es	P	N	M	H	G	F	E
xxii	A	CAL.	1	v	xvi		vii i	xix		xi
xxi	b	vi	2		v	xvi		vii i	xix	
xx	c	v	3	xiii		v	xvi		vii i	xix
xix	d	iiii	4	ii	xii i		v	xvi		viii
xviii	e	iii	5		ii	xii i		v	xvi	

Epact	Lit. Dñic.	Rom. cal.	Di es	P	N	M	H	G	F	E
xvii	f	Prid.	6	x		ii	xii i		v	xvi
xvi	g	NON.	7		x		ii	xii i		v
xv	A	viii	8	xviii		x		ii	xii i	
xiiii	b	vii	9	vij [?]	xvi ii		x		ii	xiii
xiii	c	vi	1 0		vii	xvi ii		x		ii
xii	d	v	1 1	xv		vii	xvi ii		x	
xi	e	iiii	1 2	iiii	xv		vii	xvi ii		x
x	f	iii	1 3		iiii	xv		vii	xvi ii	
ix	g	Prid.	1 4	xii		iiii	xv		vii	xvi ii
viii	A	IDIB.	1 5	i	xii		iiii	xv		vii
vii	b	xvii	1 6		i	xii		iiii	xv	
vi	c	xvi	1 7	ix		i	xii		iiii	xv
v	d	xv	1 8		ix		i	xii		iiii
iiii	e	xiiii	1 9	xvii		ix		i	xii	
iii	f	xiii	2 0	vi	xvi i		ix		i	xii
ii	g	xii	2 1		vi	xvi i		ix		i
i	A	xi	2	xiiii		vi	xvi		ix	

Epact	Lit. Dñic.	Rom. cal.	Di es	P	N	M	H	G	F	E
			2				i			
*	b	x	2	iii	xii		vi	xvi		ix
			3		ii			i		
xxix	c	ix	2		iii	xii		vi	xvi	
			4			ii			i	
xxviii	d	viii	2	xi		iii	xii		vi	xvi
			5				ii			i
xxvii	e	vii	2		xi		iii	xii		vi
			6					ii		
xxvi	f	vi	2	xix		xi		iii	xii	
			7						ii	
xxv [twin col.: 25]	g	v	2	viii	xix		xi		iii	xiii
			8							i
xxiiii	A	iiii	2		vii	xix		xi		iii
			9		i					
xxiii	b	iii	3	xvi		vii	xix		xi	
			0			i				
xxii	c	Prid.	3	v	xvi		vii	xix		xi
			1				i			

The Thirty Calendars of the Golden Numbers — OCTOBER (second leaf)

[In-frame title:] Corresponding to the Thirty Lines of the Expanded Table of Epacts [*Triginta lineis Tabulæ Epactarum expansæ respondentia.*]

OCTOBER.

Spanning heads: *The Expanded Table of Epacts* [Tabulæ Epactarum expansæ] over the golden-number columns; *Golden Numbers* [AVREI NVMERI].

This is the second October leaf (Tabulæ line-letters D C B A u t r r), without the Roman-calendar column. October has 31 days; the day-31 golden row replicates the day-1 row exactly (verified by direct read of both rows), so columns C, B, u, t, and r are doubling columns — carrying iij, xiiij, vj, xvij, ix at both day 1 and day 31 — while D, A, and r are blank at both. Numerals are predominantly j-

terminal, but the setting is not uniform: the value-28 epact is set with a plain i-terminal, xxviii, and four golden cells in the grid are likewise i-terminal (see anomaly c). All are transcribed as printed.

Epact	Lit. Dñic.	D ie s	D	C	B	A	u	t	f	r
xxij	A	1		iiij	xiiiij		vj	xv ij		ix
xxj	b	2	xj		iiij	xii ij		vj	xviij	
xx	c	3		xj		iiij	xiiiij		vj	xv ij
xix	d	4	xi x		xj		iiij	xii ij		vj
xviiij	e	5	vii j	xix		xj		iiij	xiiiij	
xviij	f	6		viiij	xix		xj		iiij	xii ij
xvj	g	7	xv j		viii [?]	xi x		xj		iiij
xv	A	8	v	xvj		vii j	xix		xj	
xiiiij	b	9		v	xvj		viiij	xi x		xj
xiiij	c	1 0	xii j		v	xv j		vii j	xix	
xij	d	1 1	ij	xiiij		v	xvi [?]		viiij	xi x
xj	e	1 2		ij	xiiij		v	xv j		vii j
x	f	1 3	x		ij	xii j		v	xvj	
ix	g	1 4		x		ij	xiiiij		v	xv j
viiij	A	1	xv		x		ij	xii		v

Epact	Lit. Dñic.	D ie s	D	C	B	A	u	t	f	r
		5	ij					j		
vij	b	1 6	vij	xviiij		x		ij	xiii [?]	
vj	c	1 7		vij	xviiij		x		ij	xii j
v	d	1 8	xv		vij	xv ij		x		ij
iiij	e	1 9	iiij	xv		vij	xviiij		x	
ij	f	2 0		iiii [?]	xv		vij	xv ij		x
ij	g	2 1	xij		iiij	xv		vij	xviiij	
j	A	2 2	j	xij		iiij	xv		vij	xv ij
*	b	2 3		j	xij		iiij	xv		vij
xxix	c	2 4	ix		j	xij		iiij	xv	
xxviii	d	2 5		ix		j	xij		iiij	xv
xxvij	e	2 6	xv ij		ix		j	xij		iiij
xxvj	f	2 7	vj	xvij		ix		j	xij	
xxv [twin col.: 25]	g	2 8		vj	xvij		ix		j	xij
xxiiij	A	2 9	xii ij		vj	xv ij		ix		j
xxiij	b	3 0	iiij	xiiiij		vj	xvij		ix	
xxij	c	3		iiij	xiiiij		vj	xv		ix

Epact	Lit. Dñic.	D ie s	D	C	B	A	u	t	f	r
		1						ij		

The Thirty Golden-Number Calendars (*Caput XV*) — October and November

These three leaves continue the set of thirty golden-number calendars introduced earlier in *Caput XV*. The first two leaves complete **October**: a *Calendaria* leaf carrying the index letters q p n m l k i (with the Roman-calendar reckoning column) and a *Tabulæ* leaf carrying h g f e d c b a (the expanded epact-tables, without the Roman-calendar column). The third leaf begins **November** with a *Calendaria* leaf carrying P N M H G F E.

In each leaf the golden numbers run as a diagonal cascade, each lettered column repeating the sequence of the column to its left one day later. Blank cells are left blank (they are meaningful).

Typographic conventions preserved: the *Calendaria* leaves (October q...i, November P...E) set the golden numbers and epacts with **i-terminal** sorts (e.g. viii, xiii, xviii); the *Tabulæ* leaf (October h...a) sets them predominantly with **j-terminal** sorts (e.g. viij, xiiij, xviiij), though not uniformly — see that leaf's note. The index letters of the two October leaves are lowercase, with visible descenders on q and p; the November leaf's P N M H G F E are capitals, with no descender on the P. The epact-30 line is marked with the asterisk *. On each leaf a marginal Arabic 25 marks the doubled epact; it is printed one line above the Roman xxv on the two leaves where its line-attachment could be fixed.

Leaf 1 — OCTOBER (*Calendaria*), index letters q p n m l k i

In-frame title: **TRIGINTA CALENDARIA AVREORVM NVMERORVM — OCTOBER**. Spanning heads: *Literæ triginta linearum* / **AVREI NVMERI**

Epact	Lit. Dñic.	Rom.- cal.	Di es	q	p	n	m	l	k	i
xxii	A	CAL.	1		i	xii		iiii	xv	
xxi	b	vi	2	ix		i	xii		iiii	xv
xx	c	v	3		ix		i	xii		iiii
xix	d	iiii	4	xvi		ix		i	xii	

Epact	Lit. Dñic.	Rom.- cal.	Di es	q	p	n	m	l	k	i
				i						
xviii	e	iii	5	vi	xvi		ix		i	xii
					i					
xvii	f	Prid.	6		vi	xvi		ix		i
						i				
xvi	g	NON.	7	xiii		vi	xvi		ix	
				i			i			
xv	A	viii	8	iii	xiii		vi	xvi		ix
					i			i		
xiiii	b	vii	9		iii	xiii		vi	xvi	
						i			i	
xiii	c	vi	10	xi		iii	xiii		vi	xvi
							i			i
xii	d	v	11		xi		iii	xiii		vi
								i		
xi	e	iiii	12	xix		xi		iii	xiii	
									i	
x	f	iii	13	viii	xix		xi		iii	xiii
										i
ix	g	Prid.	14		viii	xix		xi		iii
viii	A	IDIB.	15	xvi		viii	xix		xi	
vii	b	xvii	16	v	xvi		viii	xix		xi
vi	c	xvi	17		v	xvi		viii	xix	
v	d	xv	18	xiii		v	xvi		viii	xix
iiii	e	xiiii	19	ii	xiii		v	xvi		viii
iii	f	xiii	20		ii	xiii		v	xvi	
ii	g	xii	21	x		ii	xiii		v	xvi
i	A	xi	22		x		ii	xiii		v
*	b	x	23	xvi		x		ii	xiii	
				ii						
xxix	c	ix	24	vii	xvi		x		ii	xiii
					ii					

Epact	Lit. Dñic.	Rom.- cal.	Di es	q	p	n	m	l	k	i
xxviii	d	viii	25		vii	xvi ii		x		ii
xxvii	e	vii	26	xv		vii	xvi ii		x	
xxvi	f	vi	27	iiii	xv		vii	xvi ii		x
xxv [Margin: 25]	g	v	28		iiii	xv		vii	xvi ii	
xxiiii	A	iiii	29	xii		iiii	xv		vii	xvi ii
xxiii	b	iii	30	i	xii		iiii	xv		vii
xxii	c	Prid.	31		i	xii		iiii	xv	

Leaf 2 — OCTOBER (*Tabulæ*), index letters *h g f e d c b a*

In-frame title: **TRIGINTA LINEIS TABVLÆ EPACTARVM EXPANSÆ
RESPONDENTIA. — OCTOBER.** Spanning heads: *tabulæ Epactarum expansæ.* / **AVREI NVMERI** (No Roman-calendar column on the *Tabulæ* leaf; epacts and golden numbers set with j-terminal sorts.)

Epact	Lit. Dñic.	Di es	h	g	f	e	d	c	b	a
xxij	A	1	vij	xvii j		x		ij	xiiij	
xxj	b	2		vij	xvii j		x		ij	xiiij
xx	c	3	xv		vij	xvii j		x		ij
xix	d	4	iiij	xv		vij	xvii j		x	
xviiij	e	5		iiij	xv		vij	xvii j		x
xvij	f	6	xij		iiij	xv		vij	xvii j	
xvj	g	7	j	xij		iiij	xv		vij	xvii

Epact	Lit. Dñic.	Di es	h	g	f	e	d	c	b	a
										j
xv	A	8		j	xij		iiij	xv		vij
xiiiij	b	9	ix		j	xij		iiij	xv	
xiiij	c	10		ix		j	xij		iiij	xv
xij	d	11	xvij		ix		j	xij		iiij
xj	e	12	vj	xvij		ix		j	xij	
x	f	13		vj	xvij		ix		j	xij
ix	g	14	xiii		vj	xvij		ix		j
			j							
viiij	A	15	iiij	xiii		vj	xvij		ix	
				j						
vij	b	16		iiij	xiii		vj	xvij		ix
					j					
vj	c	17	xj		iiij	xiii		vj	xvij	
						j				
v	d	18		xj		iiij	xiii		vj	xvij
							j			
iiij	e	19	xix		xj		iiij	xiii		vj
								j		
iiij	f	20	viiij	xix		xj		iiij	xiii	
									j	
ij	g	21		viiij	xix		xj		iiij	xiii
										j
j	A	22	xvj		viiij	xix		xj		iiij
*	b	23	v	xvj		viiij	xix		xj	
xxix	c	24		v	xvj		viiij	xix		xj
xxviii	d	25	xiiij		v	xvj		viiij	xix	
xxvij	e	26	ij	xiiij		v	xvj		viiij	xix
xxvj [Margin: 25]	f	27		ij	xiiij		v	xvj		viiij
xxv	g	28	x		ij	xiiij		v	xvj	
xxiiiij	A	29		x		ij	xiiij		v	xvj
xxiiij	b	30	xvii		x		ij	xiiij		v

Epact	Lit. Dñic.	Di								
		es	h	g	f	e	d	c	b	a
			j							
xxij	c	31	vij	xvii		x		ij	xiiij	
			j							

Leaf 3 — NOVEMBER (*Calendaria*), index letters P N M H G F E

In-frame title: **TRIGINTA CALENDARIA AVREORVM NVMERORVM** —
NOVEMBER. Spanning heads: *Literæ triginta linearum* / **AVREI NVMERI** (The
index-letter headers P N M H G F E are set as **capital** sorts.)

Epact	Lit. Dñic.	Rom.- cal.	Di							
			es	P	N	M	H	G	F	E
xxi	d	CAL.	1		v	xvi		viii	xix	
xx	e	iiii	2	xiii		v	xvi		viii	xix
xix	f	iii	3	ii	xiii		v	xvi		viii
xviii	g	Prid.	4		ii	xiii		v	xvi	
xvii	A	NON.	5	x		ii	xiii		v	xvi
xvi	b	viii	6		x		ii	xiii		v
xv	c	vii	7	xvi		x		ii	xiii	
				ii						
xiiii	d	vi	8	vii	xvi		x		ii	xiii
					ii					
xiii	e	v	9		vii	xvi		x		ii
						ii				
xii	f	iiii	10	xv		vii	xvi		x	
							ii			
xi	g	iii	11	iiii	xv		vii	xvi		x
								ii		
x	A	Prid.	12		iiii	xv		vii	xvi	
									ii	
ix	b	IDIB.	13	xii		iiii	xv		vii	xvi
										ii
viii	c	xviii	14	i	xii		iiii	xv		vii
vii	d	xvii	15		i	xii		iiii	xv	

Epact	Lit. Dñic.	Rom.- cal.	Di es	P	N	M	H	G	F	E
vi	e	xvi	16	ix		i	xii		iiii	xv
v	f	xv	17		ix		i	xii		iiii
iiii	g	xiiii	18	xvi		ix		i	xii	
				i						
iii	A	xiii	19	vi	xvi		ix		i	xii
					i					
ii	b	xii	20		vi	xvi		ix		i
						i				
i	c	xi	21	xiii		vi	xvi		ix	
				i			i			
*	d	x	22	iii	xiii		vi	xvi		ix
					i			i		
xxix	e	ix	23		iii	xiii		vi	xvi	
						i			i	
xxviii	f	viii	24	xi		iii	xiii		vi	xvi
							i			i
xxvii	g	vii	25		xi		iii	xiii		vi
								i		
xxvi [Margin: 25]	A	vi	26	xix	xix	xi		iii	xiii	xiii
									i	i
xxv xxiiii	b	v	27	viii	viii	xix	xi	xi	iii	iii
xxiii	c	iiii	28	xvi		viii	xix		xi	
xxii	d	iii	29	v	xvi		viii	xix		xi
xxi	e	Prid.	30		v	xvi		viii	xix	

Chapter XV (continued). The Thirty Golden-Number Calendars / Thirty-Line Expanded Epact Tables — NOVEMBER (four leaves; this opening carries leaves 2–4).

NOVEMBER — Expanded Epact Tables answering the Thirty Lines (Tabulæ leaf 2)

In-frame title: **TRIGINTA LINEIS TA-BVLÆ EPACTARVM EXPANSÆ RESPONDENTIA.** ("Tables of epacts, expanded to answer the thirty lines.") —

NOVEMBER. Spanning head over the golden columns: *tabulæ Epactarum expansæ*. ("expanded epact tables") and **AVREI NVMERI** ("Golden Numbers").

This is a Tabulæ leaf: no Roman-calendar column. The eight golden columns are headed **D C B A u t f r** (lines 8–15 of the thirty). Most of the golden sorts are j-terminal, but the leaf is not set uniformly. The **day-15 line is set wholly in i-terminal type** (vii, xviii, x, ii, xiii), with the descendered xviiij / ij / xiiij of the day-14 line immediately above it standing as a control. The **day-30 line is mixed**: xi, xiiii and xvii are i-terminal, while iiij in column B and vj in column t on that same line keep their descenders. Isolated i-terminal sorts also stand at day 11 column B (xiii), day 16 column r (xiii), day 17 column r (ii), and day 25 column t (xii). The value-30 epact is the asterisk sort * (day 22). The value-28 epact is set with a plain i-terminal, xxviii, on this leaf that mixes i- and j-terminal sorts row by row; kept exactly as printed.

Two of the thirty lines coincide on this leaf, and the coincidence falls at **days 26 and 27**: there neighbouring golden columns carry duplicate values — xvij in C and B and xij in f and r on day 26; vj in C and B, ix in u and t, and j in f and r on day 27 — so those two rows carry more inked cells than their neighbours.

Column identity was fixed from the header rules by position and uniform column pitch, and each row was then read straight across from its Dies figure. Blank cells are left blank (meaningful).

Epact	Lit. Dñic.	Die								
		s	D	C	B	A	u	t	f	r
xxj	d	1	xj		iiij	xiiij		vj	xvij	
xx	e	2		xj		iiij	xiiij		vj	xvij
xix	f	3	xix		xj		iiij	xiiij		vj
xviiij	g	4	viiij	xix		xj		iiij	xiiij	
xvij	A	5		viiij	xix		xj		iiij	xiiij
xvj	b	6	xvj		viiij	xix		xj		iiij
xv	c	7	v	xvj		viiij	xix		xj	
xiiij	d	8		v	xvj		viiij	xix		xj
xiiij	e	9	xiiij		v	xvj		viiij	xix	
xij	f	10	ij	xiiij		v	xvj		viiij	xix
xj	g	11		ij	xiii		v	xvj		viiij
x	A	12	x		ij	xiiij		v	xvj	

Epact	Lit. Dñic.	Die s	D	C	B	A	u	t	f	r
ix	b	13		x		ij	xij		v	xvj
viiij	c	14	xviiij		x		ij	xiiij		v
vij	d	15	vii	xviii		x		ii	xiii	
vj	e	16		vij	xviiij		x		ij	xiii
v	f	17	xv		vij	xviiij		x		ii
iiiij	g	18	iiiij	xv		vij	xviiij		x	
iiij	A	19		iiiij	xv		vij	xviiij		x
ij	b	20	xij		iiiij	xv		vij	xviiij	
j	c	21	j	xij		iiiij	xv		vij	xviiij
*	d	22		j	xij		iiiij	xv		vij
xxix	e	23	ix		j	xij		iiiij	xv	
xxviii	f	24		ix		j	xij		iiiij	xv
xxvij	g	25	xvij		ix		j	xii		iiiij
xxvj	A	26	vj	xvij	xvij	ix		j	xij	xij
xxiiiij	b	27	xiiiij	vj	vj	xvij	ix	ix	j	j
xxiiij	c	28	iiiij	xiiiij		vj	xvij		ix	
xxij	d	29		iiiij	xiiiij		vj	xvij		ix
xxj	e	30	xi		iiiij	xiiiij		vj	xvii	

[twin col.: 25 — the doubled epact 25 stands in a ruled compartment at the left edge of the frame, inside the border and set off by its own horizontal rules, in both figures: Arabic 25 on the same physical line as day 26, Roman xxv on the same physical line as day 27. The epact xxv is omitted from the main epact column, which runs xxvj (day 26) → xxiiiij (day 27); the day-25 line carries nothing in this column.]

NOVEMBER — Thirty Golden-Number Calendars (Calendaria leaf 3)

In-frame title: **TRIGINTA CALENDARIA AVREORVM NVMERORVM** ("Thirty calendars of the Golden Numbers") — **NOVEMBER**. Spanning head over the golden columns: *Litteræ triginta linearum* ("Letters of the thirty lines") and **AVREI NVMERI** ("Golden Numbers").

Epact	Lit. Dñic.	Roman. cal.	Days	[?]	p	n	m	l	k	i
ix	b	IDIB.	13		viii	xix		xi		iii
viii	c	xviii	14	xvi		viii	xix		xi	
vii	d	xvii	15	v	xvi		viii	xix		xi
vi	e	xvi	16		v	xvi		viii	xix	
v	f	xv	17	xiii		v	xvi		viii	xix
iiii	g	xiiii	18	ii	xiii		v	xvi		viii
iii	A	xiii	19		ii	xiii		v	xvi	
ii	b	xii	20	x		ii	xiii		v	xvi
i	c	xi	21		x		ii	xiii		v
*	d	x	22	xvii		x		ii	xiii	
				i						
xxix	e	ix	23	vii	xviii		x		ii	xiii
xxvi	f	viii	24		vii	xvii		x		ii
ii						i				
xxvi	g	vii	25	xv		vii	xvii		x	
i							i			
xxvi	A	vi	26	iiii	xv	xv	vii	xvii	xvii	x
								i	i	
xxiii	b	v	27	xii	iiii	iiii	xv	vii	vii	xvii
i										i
xxiii	c	iiii	28	i	xii		iiii	xv		vii
xxii	d	iii	29		i	xii		iiii	xv	
xxi	e	Prid.	30	ix		i	xii		iiii	xv

[twin col.: 25 — the doubled epact 25 stands in a ruled compartment at the left edge of the frame, inside the border and set off by its own horizontal rules and a vertical rule against the epact column, in both figures: Arabic 25 on the same physical line as day 26, Roman xxv on the same physical line as day 27. The epact xxv is omitted from the main epact column, which runs xxvi (day 26) → xxiiii (day 27); the day-25 line carries nothing in this column.]

NOVEMBER — Expanded Epact Tables answering the Thirty Lines (Tabulæ leaf 4)

In-frame title: **TRIGINTA LINEIS TA-BVLÆ EPACTARVM EXPANSÆ**

RESPONDENTIA. — **NOVEMBER.** Spanning head: *tabulæ Epactarum expansæ.* and **AVREI NVMERI.**

A Tabulæ leaf (no Roman-calendar column; the value-28 epact set with a plain i-terminal, xxviii, transcribed as printed). The eight golden columns are headed **h g f e d c b a** (lines 23–30, the last of the thirty). The sorts are predominantly j-terminal but not uniformly so: isolated i-terminal sorts stand at day 4 column g (iiii), day 14 columns e and d (vi, xvii), day 21 column f (viii), day 25 column d (xvi), and day 29 column b (xiii).

Two of the thirty lines coincide on this leaf, at **days 26 and 27**, where neighbouring columns carry duplicate values — xij in f and e and xvj in c and b on day 26; x in h and g, ij in f and e, and v in c and b on day 27. The **day-30 line reproduces the day-1 line exactly**. Column identity was fixed from the header rules by position and uniform column pitch, and each row read straight across from its Dies figure.

Epact	Lit. Dñic.	Die								
		s	h	g	f	e	d	c	b	a
xxj	d	1		vij	xviiij		x		ij	xiiij
xx	e	2	xv		vij	xviiij		x		ij
xix	f	3	iiij	xv		vij	xviiij		x	
xviiij	g	4		iiii	xv		vij	xviiij		x
xvij	A	5	xij		iiij	xv		vij	xviiij	
xvj	b	6	j	xij		iiij	xv		vij	xviiij
xv	c	7		j	xij		iiij	xv		vij
xiiij	d	8	ix		j	xij		iiij	xv	
xiiij	e	9		ix		j	xij		iiij	xv
xij	f	10	xvij		ix		j	xij		iiij
xj	g	11	vj	xvij		ix		j	xij	
x	A	12		vj	xvij		ix		j	xij
ix	b	13	xiiij		vj	xvij		ix		j
viiij	c	14	iiij	xiiij		vi	xvii		ix	

Epact	Lit. Dñic.	Die								
		s	h	g	f	e	d	c	b	a
vij	d	15		iiij	xiiij		vj	xvij		ix
vj	e	16	xj		iiij	xiiij		vj	xvij	
v	f	17		xj		iiij	xiiij		vj	xvij
iiij	g	18	xix		xj		iiij	xiiij		vj
iiij	A	19	viiij	xix		xj		iiij	xiiij	
ij	b	20		viiij	xix		xj		iiij	xiiij
j	c	21	xvj		viii	xix		xj		iiij
*	d	22	v	xvj		viiij	xix		xj	
xxix	e	23		v	xvj		viiij	xix		xj
xxviii	f	24	xiiij		v	xvj		viiij	xix	
xxvij	g	25	ij	xiiij		v	xvi		viiij	xix
xxvj	A	26		ij	xiiij	xiiij	v	xvj	xvj	viiij
xxiiij	b	27	x	x	ij	ij	xiiij	v	v	xvj
xxiiij	c	28	xviiij		x		ij	xiiij		v
xxij	d	29	vij	xviiij		x		ij	xiii	
xxi	e	30		vij	xviiij		x		ij	xiiij

[twin col.: 25 — the doubled epact 25 stands in a ruled compartment at the left edge of the frame, inside the border and set off by its own horizontal rules and a vertical rule against the epact column, in both figures: Arabic 25 on the same physical line as day 26, Roman xxv on the same physical line as day 27. The epact xxv is omitted from the main epact column, which runs xxvj (day 26) → xxiiij (day 27); the day-25 line carries nothing in this column.]

Christoph Clavius, *Romani Calendarii Explicatio* (Opera Mathematica, Tomus V)

Caput XV — The Thirty Golden-Number Calendars: DECEMBER (leaves 1–3 of 4)

This opening carries three of December's four calendar leaves (December, the calendar's last month, has 31 days). There is no running prose on these pages —

the whole opening is the tabular apparatus. The month continues onto its fourth leaf (Tabulæ h g f e d c b a), which lies beyond this opening.

The three leaves are:

- **p. 300** — *Triginta Calendaria aureorum numerorum* (Calendaria leaf; carries the Roman-calendar reckoning column), golden-number lines **P N M H G F E**. i-terminal sorts.
- **p. 301** — *Triginta lineis Tabulæ Epactarum expansæ respondentia* (Tabulæ leaf; no Roman-calendar column), golden-number lines **D C B A u t f r**. j-terminal sorts.
- **p. 302** — *Triginta Calendaria aureorum numerorum* (Calendaria leaf), golden-number lines **q p n m l k i**. i-terminal sorts.

Each golden-number column runs the epact cascade — for the Calendaria (i-terminal) leaves the nineteen values xix, viii, xvi, v, xiii, ii, x, xviii, vii, xv, iiii, xii, i, ix, xvii, vi, xiiii, iii, xi; for the Tabulæ (j-terminal) leaf the same values with j-terminal sorts xix, viij, xvj, v, xiiij, ij, x, xviiij, vij, xv, iiij, xij, j, ix, xvij, vj, xiiij, iij, xj — each column entering the cascade at a different day and stepping one day rightward from its left neighbour, with blank days between successive entries. On the two Calendaria leaves the day-31 golden row reproduces the day-1 row exactly (the columns filled at day 1 are the ones filled at day 31). The Tabulæ leaf does the same, with one exception: its day-31 row carries an additional value, xix, in column D, where day 1 leaves that cell blank.

Calendaria, DECEMBER (golden lines P N M H G F E)

In-frame title: **TRIGINTA CALENDARIA AVREORVM NVMERORVM** — **DECEMBER**. Spanning heads: *Literæ triginta linearum* over P | N | M | H | G | F | E; **AVREI NVMERI**.

Epact	Lit. Dñic.	[Roman cal.]	D ie s	P	N	M	H	G	F	E
xx	f	CAL.	1	xii i		v	xvi		vii i	xix
xix	g	iiii	2	ii	xii i		v	xvi		vii i
xviii	A	iii	3		ii	xii i		v	xvi	

Epact	Lit. Dñic.	[Roman cal.]	D ie s	P	N	M	H	G	F	E
xvii	b	Prid.	4	x		ii	xii i		v	xvi
xvi	c	NON.	5		x		ii	xii i		v
xv	d	viii	6	xvi ii		x		ii	xii i	
xiiii	e	vii	7	vii	xvi ii		x		ii	xii i
xiii	f	vi	8		vii	xvi ii		x		ii
xii	g	v	9	xv		vii	xvi ii		x	
xi	A	iiii	1 0	iiii	xv		vii	xvi ii		x
x	b	iii	1 1		iiii	xv		vii	xvi ii	
ix	c	Prid.	1 2	xii		iiii	xv		vii	xvi ii
viii	d	IDIB.	1 3	i	xii		iiii	xv		vii
vii	e	xix	1 4		i	xii		iiii	xv	
vi	f	xviii	1 5	ix		i	xii		iiii	xv
v	g	xvii	1 6		ix		i	xii		iiii
iiii	A	xvi	1 7	xvi i		ix		i	xii	
iii	b	xv	1 8	vi	xvi i		ix		i	xii
ii	c	xiiii	1 9		vi	xvi i		ix		i

Epact	Lit. Dñic.	[Roman cal.]	D ie s	P	N	M	H	G	F	E
i	d	xiii	2 0	xii ii		vi	xvi i		ix	
*	e	xii	2 1	iii ii	xii ii		vi i	xvi		ix
xxix	f	xi	2 2		iii ii	xii ii		vi i	xvi	
xxviii	g	x	2 3	xi		iii ii	xii ii		vi i	xvi
xxvii	A	ix	2 4		xi		iii ii	xii		vi
xxvi	b	viii	2 5	xix		xi		iii ii	xii	
xxv [twin col.: 25]	c	vii	2 6	vii i	xix		xi		iii ii	xii
xxiiii	d	vi	2 7		vii i	xix		xi		iii
xxiii	e	v	2 8	xvi		vii i	xix		xi	
xxii	f	iiii	2 9	v	xvi		vii i	xix		xi
xxi	g	iii	3 0		v	xvi		vii i	xix	
xx [twin col.: 19]	A	Prid.	3 1	xii i		v	xvi		vii i	xix

Tabulæ, DECEMBER (golden lines D C B A u t f r)

In-frame title: **TRIGINTA LINEIS TA-BVLÆ EPACTARVM EXPANSÆ
RESPONDENTIA.** — **DECEMBER.** Spanning heads: *Tabulæ Epactarum expansæ.*
over D | C | B | A | u | t | f | r; **AVREI NVMERI.** (No Roman-calendar
column on the Tabulæ leaf.)

Epact	Lit. Dñic.	Di es	D	C	B	A	u	t	f	r
xx	f	1		xj		iiij	xiii j		vj	xvi j
xix	g	2	xix		xj		iiij	xiii j		vj
xviiij	A	3	viiij	xix		xj		iiij	xiii j	
xviij	b	4		viiij	xix		xj		iiij	xiii j
xvj	c	5	xvj		viiij	xix		xj		iiij
xv	d	6	v	xvj		viii	xix		xj	
xiiiij	e	7		v	xvj		viiij	xix		xj
xiiij	f	8	xiiij		v	xvj		viiij	xix	
xij	g	9	ij	xiiij		v	xvj		viiij	xix
xj	A	10		ij	xiiij		v	xvi		viiij
x	b	11	x		ij	xiiij		v	xvj	
ix	c	12		x		ij	xiiij		v	xvj
viiij	d	13	xvi ij		x		ij	xiiij		v
vij	e	14	vij	xvi ij		x		ij	xiiij	
vj	f	15		vij	xvi ij		x		ij	xiii
v	g	16	xv		vij	xvi ij		x		ij
iiiij	A	17	iiiij	xv		vij	xvi ij		x	
iiij	b	18		iiiij	xv		vij	xvi ij		x
ij	c	19	xij		iiii	xv		vij	xvi ij	
j	d	20	j	xij		iiiij	xv		vij	xvi ij

Epact	Lit. Dñic.	Di es	D	C	B	A	u	t	f	r
*	e	21		j	xij		iiij	xv		vij
xxix	f	22	ix		j	xij		iiij	xv	
xxviii	g	23		ix		j	xij		iiij	xv
xxvij	A	24	xvi		ix		j	xij		iiij
			j							
xxvj	b	25	vj	xvi		ix		j	xij	
				j						
xxv [twin col.: 25]	c	26		vj	xvi		ix		j	xij
					j					
xxiiij	d	27	xiii		vj	xvi		ix		j
			j			j				
xxiij	e	28	iiij	xiii		vj	xvi		ix	
				j			j			
xxij	f	29		iiij	xiii		vi	xvi		ix
					j			i		
xxi	g	30	xj		iiij	xiii		vj	xvi	
						j			j	
xx [twin col.: 19]	A	31	xix	xj		iiij	xiii		vj	xvi
							j			j

Calendaria, DECEMBER (golden lines q p n m l k i)

In-frame title: **TRIGINTA CALENDARIA AVREORVM NVMERORVM** —

DECEMBER. Spanning heads: *Literæ triginta linearum* over q | p | n | m | l | k | i; **AVREI NVMERI.**

Epact	Lit. Dñic.	[Roman cal.]	D ie	s	q	p	n	m	l	k	i
xx	f	CAL.		1		ix		i	xii		iiii
xix	g	iiii		2	xvi		ix		i	xii	
					i						
xviii	A	iii		3	vi	xvi		ix		i	xii
						i					
xvii	b	Prid.		4		vi	xvi		ix		i

Epact	Lit. Dñic.	[Roman cal.]	D ie s q p n m l k i							
						i				
xvi	c	NON.	5	xii ii		vi	xvi i		ix	
xv	d	viii	6	iii	xii ii		vi	xvi i		ix
xiiii	e	vii	7		iii	xii ii		vi	xvi i	
xiii	f	vi	8	xi		iii	xii ii		vi	xvi i
xii	g	v	9		xi		iii	xii ii		vi
xi	A	iiii	1 0	xix		xi		iii	xii ii	
x	b	iii	1 1	vii i	xix		xi		iii	xii ii
ix	c	Prid.	1 2		vii i	xix		xi		iii
viii	d	IDIB.	1 3	xvi		vii i	xix		xi	
vii	e	xix	1 4	v	xvi		vii i	xix		xi
vi	f	xviii	1 5		v	xvi		vii i	xix	
v	g	xvii	1 6	xii i		v	xvi		vii i	xix
iiii	A	xvi	1 7	ii	xii i		v	xvi		vii i
iii	b	xv	1 8		ii	xii i		v	xvi	
ii	c	xiiii	1 9	x		ii	xii i		v	xvi
i	d	xiii	2		x		ii	xii		v

Epact	Lit. Dñic.	[Roman cal.]	D ie s	q	p	n	m	l	k	i
			0					i		
*	e	xii	2	xvi		x		ii	xii	
			1	ii					i	
xxix	f	xi	2	vii	xvi		x		ii	xii
			2		ii					i
xxviii	g	x	2		vii	xvi		x		ii
			3			ii				
xxvii	A	ix	2	xv		vii	xvi		x	
			4				ii			
xxvi	b	viii	2	iiii	xv		vii	xvi		x
			5					ii		
xxv [twin col.: 25]	c	vii	2		iiii	xv		vii	xvi	
			6						ii	
xxiiii	d	vi	2	xii		iiii	xv		vii	xvi
			7							ii
xxiii	e	v	2	i	xii		iiii	xv		vii
			8							
xxii	f	iiii	2		i	xii		iiii	xv	
			9							
xxi	g	iii	3	ix		i	xii		iiii	xv
			0							
xx [twin col.: 19]	A	Prid.	3		ix		i	xii		iiii
			1							

December — fourth and last leaf of the Thirty Golden-Number Calendars

TRIGINTA LINEIS TA-/BVLÆ EPACTARVM EXPANSÆ / RESPONDENTIA.
(Corresponding to the thirty lines of the expanded table of epacts.)

DECEMBER.

Spanning heads: **Tabulæ Epactarum expansæ** *(The expanded table of epacts)* — golden-number columns **h g f e d c b a** — **AVREI NVMERI** *(The golden numbers)*.

This is the fourth (final) December leaf of the Tabulæ series, completing the thirty-calendar table of Caput XV. It is a Tabulæ leaf (no Roman-calendar column); the framework columns are Epactæ | Lit. Dñical. | Dies Menfis, followed by the eight golden-number columns h g f e d c b a. Blank cells are blank.

Epact	Lit. Dñic.	Di es	h	g	f	e	d	c	b	a
xx	f	1	xv		vij	xvi ij		x		ij
xix	g	2	iiij	xv		vij	xvi ij		x	
xviii	A	3		iiij	xv		vij	xvi ij		x
xvij	b	4	xij		iiij	xv		vij	xvi ij	
xvj	c	5	j	xij		iiij	xv		vij	xvi ij
xv	d	6		j	xij		iiij	xv		vij
xiiij	e	7	ix		j	xij		iiij	xv	
xiiij	f	8		ix		j	xij		iiij	xv
xij	g	9	xvi j		ix		j	xij		iiij
xj	A	10	vj	xvi j		ix		j	xij	
x	b	11		vj	xvi j		ix		j	xij
ix	c	12	xiii j		vj	xvi j		ix		j
viiij	d	13	iiij	xiii j		vj	xvi j		ix	
vij	e	14		iiij	xiii j		vj	xvi j		ix
vj	f	15	xj		iiij	xiii j		vj	xvi j	
v	g	16		xj		iiij	xiii		vj	xvi

Epact	Lit. Dñic.	Di es	h	g	f	e	d	c	b	a
							j			j
iiij	A	17	xix		xj		iiij	xiii		vj
							j			
iiij	b	18	viiij	xix		xj		iiij	xiii	
								j		
ij	c	19		viiij	xix		xj		iiij	xiii
									j	
j	d	20	xvj		viiij	xix		xj		iiij
*	e	21	v	xvj		viiij	xix		xj	
xxix	f	22		v	xvj		viiij	xix		xj
xxviii	g	23	xiiij		v	xvj		viiij	xix	
xxvij	A	24	ij	xiiij		v	xvj		viiij	xix
xxvj	b	25		ij	xiiij		v	xvj		viiij
xxv [twin col.: 25]	c	26	x		ij	xiiij		v	xvj	
xxiiij	d	27		x		ij	xiiij		v	xvj
xxiiij	e	28	xvi		x		ij	xiiij		v
			ij							
xxij	f	29	vij	xvi		x		ij	xiiij	
				ij						
xxi	g	30		vij	xvi		x		ij	xiiij
					ij					
xx [twin col.: 19]	A	31	xv		vij	xvi		x		ij
						ij				

[Margin: How the new moons are to be investigated by means of the golden numbers of the thirty Calendars.]

3. The use of the preceding thirty Calendars, in which the golden numbers are set out, for investigating the new moons is in every way the same as that of the new Gregorian Calendar, in which the epacts are inscribed. For when you are about to find the new moons by means of the golden numbers of these thirty Calendars, consider which letter of the alphabet — set down in the upper table of the equation of the epacts [aequatio Epactarum] (Caput 11 and 12) — corresponds to the year proposed, whether that year is itself a centennial year, or the centennial

year within which the proposed year falls. For if you use the golden numbers arranged under that same letter in the preceding thirty Calendars, you will find the new moons on exactly the same days on which they are indicated by the epacts, so that there is no difference at all between the epacts and the golden numbers in the investigation of the new moons. Thus you see, for example, that in the Jubilee year 1600 — to which the capital letter D is prefixed in the table of the equation of the epacts — the golden number 5, which is in use that year, found among the thirty Calendars under the capital letter D, indicates the new moons on precisely the same days as the epact of the year does. That is (which comes to the same thing), the golden number 5 and the epact xv are written opposite the same days of the months. And the same reasoning holds for the rest.

Furthermore, in these thirty Calendars of golden numbers drawn from the Cycle of Epacts, we never find two golden numbers falling on the same day of the month — although two epacts sometimes do, as for instance xxv and xxiii, and 25 and xxvi, and 19 and xx, which are set opposite the same day in the Gregorian Calendar. The reason for this we explained above at Caput 10, Num. 5 and 11.

[Margin: The inconvenience of the thirty Calendars.] And although the method of investigating the new moons is the same whether by the epacts or by the golden numbers arranged in the thirty Calendars, and the one agrees with the other in every respect, nevertheless — because the multitude of thirty Calendars is very inconvenient, both because confusion could easily arise from them in various regions (one region using this Calendar and another that one at the same time), and because, in order to construct Paschal tables from them and to announce the age of the Moon correctly in the Martyrology, thirty Paschal tables and thirty Martyrologies would have to be drawn up for the thirty Calendars — it is safer, and more in keeping with the practice of the Church, to use the numbers of the epacts, in the Calendar as well as in the Paschal tables and the Martyrology. For a single line of epacts distributed through the days in the Calendar accomplishes all this most conveniently, as is plainly evident from the new Calendar and from the Martyrology adapted to the Gregorian restoration of the year.

CAPVT XVI.

The lunations of all thirty Cycles of the expanded table of epacts, resolved into their several quantities throughout the whole year, in that same order which they keep in the Calendar through the months of the entire year.

[Margin: An explanation of the thirty tables comprising all the lunations of the thirty Cycles of the expanded table.]

So that everyone may not only understand, but also perceive with their very eyes, how aptly and suitably the epacts in the new Calendar — and the golden numbers excerpted from the epacts in the thirty Calendars — have been placed for indicating the new moons, and how distinctly and in what order the lunations of each Cycle proceed in the Calendar by alternating intervals of 30 and 29 days, as the reckoning requires, I judge it worthwhile to append here another thirty tables of lunations, corresponding in order to the thirty Cycles of epacts of the expanded table, or to the thirty preceding Calendars of golden numbers. In this way the lunations of each Cycle are resolved into their quantities — that is, into days — in the same order that they keep throughout the months of the whole year in the Calendar.

First, then, in these tables all 19 golden numbers are placed on the left, always beginning from the one that corresponds to epact * in each line of the expanded table, or to epact 1 when epact * is not found in the Cycle of a given line. For from one or the other of these epacts every nineteen-year cycle [Cyclus decennovennalis] must begin, as we shall show in the next chapter. Next follow the 19 epacts in the order they observe within each Cycle of the expanded table — yet in such a way that the first is * (or 1, if the Cycle happens not to have epact *), while the others are produced by continually adding 11 to the immediately preceding epact, with the exception of the epact placed opposite golden number 1. For this last is formed from the preceding epact, placed opposite golden number 10, by the addition of 12, as was shown above at Caput 12, Num. 14. Third, the days of January, or of December, are written down on which the first lunations begin. Fourth, the days of December — or of November — on which the twelfth lunations end are noted. Fifth, the days of December are marked on which the thirteenth lunations end, if the year is embolismic. Sixth, the number of days of the whole lunar year is noted. Finally, all the lunations of the year are set out in order, each being reckoned at 30 or 29 days.

But this too must be understood: the first lunation of the year, whose beginning falls in December, does not begin from the epact that indicates the new moons in that year, but from the one that stands higher in these tables — namely, from the epact that was still in use in December of the immediately preceding year, and which is placed opposite that day of December on which the first lunation is said to begin; for the use of the epact of the year in question begins in January, and not before. For example, although in the first table, with epact xiiij current, the first lunation of that year begins on 18 December, it nevertheless does not begin from epact xiiij — since this is not found opposite the 18th in that same month — but from epact iij, which pointed out the new moons in the preceding year, and

which changes in January into epact xiiij. And the same reasoning is to be observed in the rest. But now examine the tables themselves.

Here follow the Lunations of the Thirty Cycles of the expanded table of Epacts.

How many days each lunation contains, both in a common year and in an embolismic one, in the first Cycle of the expanded table — to which the capital letter **P** is prefixed, and to which, among the thirty Calendars of golden numbers, the first Calendar under the same capital letter **P** corresponds.

Table column heads (verbatim): **AVREI NVMERI** (*The golden numbers*) | **EPACTÆ** (*The epacts*) | **Initium primi mensis Lunar***is tam in anno communi, quam in Embolismico* (*Beginning of the first lunar month, both in the common and in the embolismic year*) | **Finis duodecimi mensis Lunar***is tã in anno communi, quam in Embolismico* (*End of the twelfth lunar month, both in the common and in the embolismic year*) | **Finis tertijdecimi mensis Lunar***is in anno Embolismico* (*End of the thirteenth lunar month in the embolismic year*) | **Magnitudo anni Lunar***is tam communis quam Embolismici* (*Length of the lunar year, both common and embolismic*) | **NVMERVS ET ORDO Lunationum totius anni** (*The number and order of the lunations of the whole year*): columns 1–13 = Prima, Secunda, Tertia, Quarta, Quinta, Sexta, Septima, Octaua, Nona, Decima, Vndecima, Duodecima, Tertiadecima Lunatio.

Below, the last six columns (headed 1–13) give the ordered lengths of the lunations. Blank = no thirteenth lunation (common year).

Aur . N.	Ep act	Init. 1st month	End 12th month	End 13th month	Length of yr
3	*	1 Ian.	20 Dec.		354
4	xj	21 Dec	9		354
5	xxi j	10	28 No.	28 Dec.	384
6	iiij	29	17 Dec.		354
7	xiii j	18	6		354
8	xx v	7	26 No.	25 Dec.	384
9	vj	26	14 Dec.		354
10	xvi	15	3		354

Aur . N.	Ep act	Init. 1st month	End 12th month	End 13th month	Length of yr
	j				
11	xx viiij	4	23 No.	22 Dec.	384
12	ix	23	11		354
13	xx	12	30 No.	30 Dec.	384
14	j	31	19 Dec.		354
15	xij	20	8		354
16	xxi ij	9	27 No.	27 Dec.	384
17	iiij	28	16 Dec.		354
18	xv	17	5		354
19	xx vj	6	25 No.	24 Dec.	384
1	viiij	25	12 Dec.		354
2	xix	13	1 Dec.	31 Dec.	384

Caput XVI — Lunation tables of the Thirty Cycles (continued)

(Global source pp. 306–308 / printed pp. 306–308. Three full-page lunation tables: the Second Cycle — capital letter N; the Third Cycle — capital letter M; and the Fourth Cycle — capital letter H. Each is a 19-row table of the golden numbers.)

Second Cycle — capital letter N (p. 306)

The number of days that each lunation contains, in the common year as well as in the embolismic year, for the **second Cycle** of the expanded table — the one headed by the capital letter N, to which corresponds the second of the thirty golden-number Calendars, set under the same capital letter N.

Column headings. Golden Numbers [Aurei Numeri] · Epacts [Epactae] · Beginning of the first lunar month, in both the common and the embolismic year [Initium primi mensis Lunar] · End of the twelfth lunar month, in both the common and the embolismic year [Finis duodecimi mensis Lunar] · End of the

thirteenth lunar month, in the embolismic year [Finis tertijdecimi mensis Lunaris in anno Embolismico] · Length of the lunar year, common as well as embolismic [Magnitudo anni Lunaris] · **The number and order of the lunations of the whole year** [Numerus et ordo Lunationum totius anni], columns 1–13 = First through Thirteenth Lunation (Prima ... Tertiadecima Lunatio).

Golden No.	Ep act	1st month begins	End 12th mo.	End 13th mo.	Le ngt h
14	*	1 Ian.	20 Dec.		354
15	xj	21 Dec.	9		354
16	xxi j	10	28 No.	28 Dec.	384
17	iiij	29	17 Dec.		354
18	xiii j	18	6		354
19	25	7	26 No.	25 Dec.	384
1	vij	26	13 Dec.		353
2	xvi ij	14	2		354
3	xxi x	3	21 No.	21 Dec.	384
4	x	22	10		354
5	xxj	11	29 No.	29 Dec.	384
6	ij	30	18 Dec.		354
7	xiiij	19	7		354
8	xxi iiij	8	26 No.	26 Dec.	384
9	v	27	15 Dec.		354
10	xvj	16	4		354
11	xxv ij	5	24 No.	23 Dec.	384
12	viiij	24	12		354
13	xix	13	1 Dec.	31 Dec.	384

Anomaly (Golden No. 1, the saltus row): the Length column reads **353** (the shortened saltus year), but the twelve printed lunation cells read 30 29 30 29 30 29 30 29 30 29 30 29, which sum to **354**. On the two parallel Cycles overleaf (pp. 307 and 308) the saltus row begins 29 29 ... (summing to 353); here the First Lunation is printed 30 where the saltus pattern requires 29. Transcribed as printed; the discrepancy is flagged, not silently corrected. All cells were read directly from the page, row by row; the surrounding rows are read glyph by glyph, not derived from the ± 30 alternation.

Third Cycle — capital letter M (p. 307)

The number of days that each lunation contains, in the common year as well as in the embolismic year, for the **third Cycle** of the expanded table — the one headed by the capital letter **M**, to which corresponds the third of the thirty golden-number Calendars, set under the same capital letter **M**.

Golden No.	Ep act	1st month begins	End 12th mo.	End 13th mo.	Length
6	j	31 Dec.	19 Dec.		354
7	xij	20	8		354
8	xxi ij	9	27 No.	27 Dec.	384
9	iiij	28	16 Dec.		354
10	xv	17	5		354
11	xxv j	6	25 No.	24 Dec.	384
12	vij	25	13 Dec.		354
13	xvi ij	14	2		354
14	xxi x	3	22 No.	21 Dec.	384
15	x	22	10 Dec.		354
16	xxj	11	29 No.	29 Dec.	384
17	ij	30	18 Dec.		354
18	xiiij	19	7		354
19	xxi	8	26 No.	26 Dec.	384

Golden No.	Ep act	1st month begins	End 12th mo.	End 13th mo.	Length
	ij				
1	vj	27	14 Dec.		353
2	xvi j	15	3		354
3	xxv ij	4	23 No.	22 Dec.	384
4	ix	23	11 Dec.		354
5	xx	12	30 Dec.	30 Dec.	384

Here the saltus row (Golden No. 1, Length 353) correctly begins 29 Dec., summing to 353.

Anomaly (Golden No. 5, final row): the page sets the End-12th-month and End-13th-month cells identically as 30 Dec. | 30 Dec. — a twelfth month and a thirteenth month ending on the same day, which is impossible. Transcribed as printed; the expected setting on the pattern of the other embolismic rows would be [recte: 30 No.] in the End-12th column, but that conjecture is **not** entered in the table. Read at high magnification in the bottom row of the grid, anchored on that row's epact xx and on the heavy bottom table rule immediately below; the Dec. matches the Dec. of 14 Dec. and 11 Dec. one and two rows above and is plainly distinct from the No. of 26 No. and 23 No. in the same part of the page.

Fourth Cycle — capital letter H (p. 308)

The number of days that each lunation contains, in the common year as well as in the embolismic year, for the **fourth Cycle** of the expanded table — the one headed by the capital letter **H**, to which corresponds the fourth of the thirty golden-number Calendars, set under the same capital letter **H**.

Golden No.	Ep act	1st month begins	End 12th mo.	End 13th mo.	Length
6	*	1 Ian.	20 Dec.		354
7	xj	21 Dec.	9		354
8	xxi j	10	28 No.	28 Dec.	384

Golden No.	Ep act	1st month begins	End 12th mo.	End 13th mo.	Length
9	iiij	29	17 Dec.		354
10	xiii j	18	6		354
11	xxv j	7	26 No.	25 Dec.	384
12	vj	26	14 Dec.		354
13	xvi j	15	3		354
14	xxv iiij	4	23 No.	22 Dec.	384
15	ix	23	11 Dec.		354
16	xx	12	30 No.	30 Dec.	384
17	j	31	19 Dec.		354
18	xij	20	8		354
19	xxi ij	9	27 No.	27 Dec.	384
1	v	28	15 Dec.		353
2	xvj	16	4		354
3	xxv ij	5	24 No.	23 Dec.	384
4	viiij	24	12 Dec.		354
5	xix	13	1 Dec.	31 Dec.	384

Caput XVI (continued) — Lunationes of the Cycles

The Lunations of the Fifth Cycle (letter G)

How many days each lunation contains — both in a common year and in an embolismic one — in the **fifth Cycle** of the expanded table, the one prefixed by the capital letter **G**, and to which corresponds the fifth of the thirty golden-number Calendars set under the same capital letter **G**.

Column headers, verbatim and translated:

- **AVREI NVMERI** — Golden Numbers
- **EPACTÆ** — Epacts
- **Initium primi mensis Lunaribus tam in anno communi, quam in Embolismico** — Beginning of the first lunar month, in a common year as well as in an embolismic one
- **Finis duodecimi mensis Lunaribus tam in anno communi, quam in Embolismico** — End of the twelfth lunar month, in a common year as well as in an embolismic one
- **Finis tertijdecimi mensis Lunaribus in anno Embolismico** — End of the thirteenth lunar month, in an embolismic year
- **Magnitudo anni Lunaribus tam communis, quam Embolismici** — Length of the lunar year, both common and embolismic
- **NVMERVS ET ORDO Lunationum totius anni** — The number and order of the lunations of the whole year (Prima Lunatio ... Tertiadecima Lunatio = 1st Lunation ... 13th Lunation)

In the date columns, No. = November (Novembris), Dec. = December, Ian. = January; a bare number continues the month named just above it (December unless a No. intervenes). The epact * is the new-Calendar sign for epact 30. The lunation columns 1–13 give each lunation's length (29 or 30 days) in order; the 13th appears only in embolismic (384-day) years. Length 353 marks the saltus year (golden number 1).

Golden No.		Epact		First month begins					End 12th month					End 13th month											
Length		1	2	3	4	5	6	7	8	9	10	11	12	13											
--- ---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	17	*	1 Ian.							
20 Dec.			354		30		29		30		29		30		29		30		29		30		29		18
xj 21 Dec.			9		354		30		29		30		29		30		29		30		29		30		29
19 xxij			10		28 No.		28 Dec.		384		30		29		30		29		30		29		30		30
29 30 29 30			1		iiij		29		16 Dec.		353		29		29		30		29		30		29		30
29 30 29 30			29		2		xv		17		5		354		30		29		30		29		30		30
29 30 29 30			29		3		xxvj		6		25 No.		24 Dec.		384		30		30		29		30		30
29 30 29 30			29		30		29		30		29		4		vij		25		13 Dec.		354		30		29
30 29 30 29			30		29		30		29		30		29		5		xviiij		14		2		354		30
29 30 29 30			29		30		29		30		29		30		29		6		xxix		3		22 No.		21
Dec. 384			30		30		29		30		29		30		29		30		29		30		29		7
22 10 Dec.			354		30		29		30		29		30		29		30		29		30		29		8
xxj			11		29 No.		29 Dec.		384		30		29		30		29		30		29		30		29

30 | 29 | 30 | | 9 | ij | 30 | 18 Dec. | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 |
30 | 29 | 30 | 29 | | | 10 | xij | 19 | 7 | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 |
29 | 30 | 29 | 30 | 29 | | | 11 | xxiiij | 8 | 26 No. | 26 Dec. | 384 | 30 | 29 | 30 | 29
| 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | | 12 | v | 27 | 15 Dec. | | 354 | 30 | 29
| 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 13 | xvj | 16 | 4 | | 354 | 30 |
29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 14 | xxvij | 5 | 24 No. | 23
Dec. | 384 | 30 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 15 | viij
| 24 | 12 Dec. | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | |
16 | xix | 13 | 1 Dec. | 31 Dec. | 384 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29
| 30 | 29 | 30 |

The Lunations of the Sixth Cycle (letter F)

How many days each lunation contains — both in a common year and in an embolismic one — in the **sixth Cycle** of the expanded table, the one prefixed by the capital letter **F**, and to which corresponds the sixth of the thirty golden-number Calendars set under the same capital letter **F**. (Column headers as in the fifth-Cycle table above.)

Golden No.	Epact	First month begins	End 12th month	End 13th month																											
Length	1	2	3	4	5	6	7	8	9	10	11	12	13																		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9	j	31 Dec.													
19 Dec.		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29		10													
xij	20	8		354	30	29	30	29	30	29	30	29	30	29	30	29		11													
xxij	9	27 No.	27 Dec.	384	30	29	30	29	30	29	30	29	30	29	30	29		12													
30	29	30		12	iiij	28	16 Dec.		354	30	29	30	29	30	29	30	29		13												
30	29	30	29			13	xv	17	5		354	30	29	30	29	30	29		14												
29	30	29	30	29			14	xxvj	6	25 No.	24 Dec.	384	30	30	29	30			15												
29	30	29	30	29	30	29	30	29		15	vij	25	13 Dec.		354	30			16												
29	30	29	30	29	30	29	30	29	30	29		16	xviiij	14	2		354			17											
30	29	30	29	30	29	30	29	30	29	30	29		17	xxix	3	22 No.				18											
21 Dec.	384	30	30	29	30	29	30	29	30	29	30	29	30	29	30	29		18													
x	22	10		354	30	29	30	29	30	29	30	29	30	29	30	29		19													
xxj	11	29 No.	29 Dec.	384	30	29	30	29	30	29	30	29	30	29	30	29		20													
30	29	30		1	iiij	30	17 Dec.		353	29	29	30	29	30	29	30	29		21												
30	29	30	29			2	xiiiij	18	6		354	30	29	30	29	30	29		22												
30	29	30	29			3	xxv	7	26 No.	25 Dec.	384	30	30	29	30	29			23												
30	29	30	29	30	29	30	29		4	vj	26	14 Dec.		354	30	29	30			24											
29	30	29	30	29	30	29	30	29			5	xvij	15	3		354	30	29			25										
30	29	30	29	30	29	30	29	30	29			6	xxviii	4	23 No.	22 Dec.															

384 | 30 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 7 | ix | 23 |
 11 | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 8 | xx | 12
 | 30 No. | 30 Dec. | 384 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 |
 30 |

The Lunations of the Seventh Cycle (letter E)

How many days each lunation contains — both in a common year and in an embolismic one — in the **seventh Cycle** of the expanded table, the one prefixed by the capital letter **E**, and to which corresponds the seventh of the thirty golden-number Calendars set under the same capital letter **E**. (Column headers as in the fifth-Cycle table above.)

Golden No.	Epact	First month begins	End 12th month	End 13th month
Length 1 2 3 4 5 6 7 8 9 10 11 12 13				
--- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---				
9 * 1 Ian.				
20 Dec. 354 30 29 30 29 30 29 30 29 30 29 30 29 10				
xj 21 Dec. 9 354 30 29 30 29 30 29 30 29 30 29 30 29				
11 xxij 10 28 No. 28 Dec. 384 30 29 30 29 30 29 30 29 30 29 30				
29 30 29 30 12 iij 29 17 Dec. 354 30 29 30 29 30 29 30				
29 30 29 30 29 13 xiiij 18 6 354 30 29 30 29 30 29				
30 29 30 29 30 29 14 25 7 25 No. 25 Dec. 384 30 29 30				
29 30 29 30 29 30 29 30 29 30 15 vj 26 14 Dec. 354 30				
29 30 29 30 29 30 29 30 29 30 29 16 xvij 15 3 354				
30 29 30 29 30 29 30 29 30 29 30 29 17 xxviiij 4 23 No.				
22 Dec. 384 30 30 29 30 29 30 29 30 29 30 29 30 29 18				
ix 23 11 Dec. 354 30 29 30 29 30 29 30 29 30 29 30 29				
19 xx 12 30 No. 30 Dec. 384 30 29 30 29 30 29 30 29				
30 29 30 29 30 1 ij 31 18 Dec. 353 29 29 30 29 30 29				
30 29 30 29 30 29 2 xiiij 19 7 354 30 29 30 29 30 29				
30 29 30 29 30 29 3 xxiiij 8 26 No. 26 Dec. 384 30 29				
30 29 30 29 30 29 30 29 30 29 30 4 v 27 15 Dec. 354				
30 29 30 29 30 29 30 29 30 29 30 29 5 xvj 16 4 354				
30 29 30 29 30 29 30 29 30 29 30 29 6 xxvij 5 24 No.				
23 Dec. 384 30 30 29 30 29 30 29 30 29 30 29 30 29 7				
viiij 24 12 Dec. 354 30 29 30 29 30 29 30 29 30 29 30 29				
8 xix 13 1 Dec. 31 Dec. 384 30 29 30 29 30 29 30 29 30				
29 30 29 30				

Caput XVI — Lunationes of the Cycles (continued): the 8th, 9th, and 10th Cycles

How many days each lunation contains, both in a common year and in an embolismic year, in the eighth Cycle of the expanded table — the table to which the capital letter D is prefixed, and to which the eighth of the thirty golden-number Calendars under the same capital letter D corresponds.

Column headings of the table (verbatim):

- **Aurei Numeri** — Golden Numbers
- **Epactæ** — Epacts
- **Initium primi mensis Lunaris tam in anno communi, quam in Embolismico** — Beginning of the first lunar month, both in a common and in an embolismic year (**Init.**)
- **Finis duodecimi mensis Lunaris tam in anno communi, quam in Embolismico** — End of the twelfth lunar month, both in a common and in an embolismic year (**End 12th**)
- **Finis tertijdecimi mensis Lunar in anno Embolismico** — End of the thirteenth lunar month in an embolismic year (**End 13th**)
- **Magnitudo anni Lunar tam communis, quam Embolismici** — Length of the lunar year, both common and embolismic (**Length**)
- **Numerus et Ordo Lunationum totius anni** — The number and order of the lunations of the whole year (**1st–13th**), the sub-columns headed *Prima, Secunda, Tertia, Quarta, Quinta, Sexta, Septima, Octaua, Nona, Decima, Vndecima, Duodecima, Tertiadecima Lunatio*.

Dates: bare numbers in the Init. / End 12th / End 13th columns are days of December unless marked **No.** (November) or **Ian.** (January), exactly as the source prints the abbreviation only where the month changes.

Eighth Cycle — litera D

[illegible]

[illegible]

[illegible]

Ninth Cycle — litera C

Gol den	Epa ct		Init.	End 12th	End 13th	Len gth	1 s t	2 n d	3 r d	4 t h	5 t h	6 t h	7 t h	8 t h	9 t h	1 0t h	1 1t h	1 2t h	1 3t h
				No.	Dec.		0	9	0	9	0	9	0	9	0	9	0	9	0
12	j	31		19 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	
							0	9	0	9	0	9	0	9	0	9	0	9	
13	xij	20		8		354	3	2	3	2	3	2	3	2	3	2	3	2	
							0	9	0	9	0	9	0	9	0	9	0	9	
14	xxii j	9		27 No.	27 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3
							0	9	0	9	0	9	0	9	0	9	0	9	0
15	iii j	28		16 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	
							0	9	0	9	0	9	0	9	0	9	0	9	
16	xv	17		5		354	3	2	3	2	3	2	3	2	3	2	3	2	
							0	9	0	9	0	9	0	9	0	9	0	9	
17	xxv j	6		25 No.	24 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2
							0	0	9	0	9	0	9	0	9	0	9	0	9
18	vij	25		13 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	
							0	9	0	9	0	9	0	9	0	9	0	9	
19	xvii j	14		2 Dec.	31 Dec.	383	3	2	3	2	3	2	3	2	3	2	3	2	2
							0	9	0	9	0	9	0	9	0	9	0	9	9

How many days each lunation contains, both in a common year and in an embolismic year, in the tenth Cycle of the expanded table — the table to which the capital letter B is prefixed, and to which the tenth of the thirty golden-number Calendars under the same capital letter B corresponds.

On this leaf the Golden-Number column is set beginning from 12 (running 12 → 19, then 1 → 11), because the * epact opens the tenth Cycle at golden 12.

Tenth Cycle — litera B

[illegible]

[illegible]

Gol	Epa		End	End	Len	1	2	3	4	5	6	7	8	9	1	1	1	1
den	ct	Init.	12th	13th	gth	s	n	r	t	t	t	t	t	t	0t	1t	2t	3t
11	xix	13	1	31	384	3	2	3	2	3	2	3	2	3	2	3	2	3
			Dec.	Dec.		0	9	0	9	0	9	0	9	0	9	0	9	0

Caput XVI (continued) — The *Lunationes* Tables of the Thirty Cycles

(Continuation of Caput XVI of the Explicatio*: the tables of the lengths of the lunations for each Cycle. This opening carries the 11th, 12th, and 13th Cycles — line-letters A, u, t.)*

Each table has the same column structure:

- **Golden Nos.** (*Aurei Numeri*)
- **Epacts** (*Epactæ*)
- **Init.** — *Initium primi mensis Lunaris tam in anno communi, quam in Embolismico*: the beginning of the first lunar month, in both the common and the embolismic year.
- **End 12th** — *Finis duodecimi mensis Lunaris tam in anno communi, quam in Embolismico*: the end of the twelfth lunar month, in both the common and the embolismic year.
- **End 13th** — *Finis tertijdecimi mensis Lunaris in anno Embolismico*: the end of the thirteenth lunar month, in the embolismic year only.
- **Length** — *Magnitudo anni Lunaris tam communis, quam Embolismici*: the length of the lunar year, whether common or embolismic (354 common / 384 embolismic / 353 or 383 in the saltus year).
- **Number and order of the lunations of the whole year** (*Numerus et ordo Lunationum totius anni*): columns 1–13 = Prima, Secunda, Tertia, Quarta, Quinta, Sexta, Septima, Octaua, Nona, Decima, Vndecima, Duodecima, Tertiadecima Lunatio (each 29 or 30 days; the 13th only in embolismic years).

Eleventh Cycle — litera A (capital)

How many days each lunation contains, in both the common and the embolismic year, in the **eleventh** Cycle of the expanded tables — the Cycle prefixed by the letter **A**, capital, and to which the eleventh of the

thirty Calendars of golden numbers corresponds under that same letter A, capital.

[illegible]

Caput XVI — Lunations of the Fourteenth Cycle (line-letter 𐌒)

How many days each lunation contains, both in the common year and in the embolismic year, in the expanded table of the fourteenth Cycle, to which is prefixed the small letter f, and to which, of the thirty golden-number Calendars, the fourteenth under the same small letter f corresponds.

Column headers (shared by all three tables of this leaf):

- **Golden Numbers** [Aurei Numeri]
- **Epacts** [Epactæ]
- **Beginning of the first lunar month, both in the common and in the embolismic year** [Initium primi mensis Lunararis tam in anno communi, quam in Embolismico]
- **End of the twelfth lunar month, both in the common and in the embolismic year** [Finis duodecimi mensis Lunararis tam in anno communi, quam in Embolismico]
- **End of the thirteenth lunar month in the embolismic year** [Finis tertijdecimi mensis Lunararis in anno Embolismico]
- **Length of the lunar year, both common and embolismic** [Magnitudo anni Lunararis tam communis quam Embolismici]
- **THE NUMBER AND ORDER of the lunations of the whole year** [NVMERVS ET ORDO Lunationum totius anni] — the thirteen columns headed First through Thirteenth Lunation (Prima ... Tertiadecima Lunatio).

In the lunation columns below, No. = November, Dec. = December, Ian. = January. Blank cells in the "End of the thirteenth month" column and in the thirteenth-lunation column are left empty (these apply only to embolismic years).

[illegible]

Golden No.	Epa ct	Init. 1st mo.	End 12th mo.	End 13th mo.	Len gth	1 1 1 1															
						1	2	3	4	5	6	7	8	9	0	1	2	3			
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
9	xxii j	9	27 No.	27 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
10	iiiij	28	16 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
11	xv	17	5		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
12	xxv j	6	25 No.	24 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3		
						0	0	9	0	9	0	9	0	9	0	9	0	9	0		
13	vij	25	13 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
14	xvii j	14	2		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
15	xxi x	3	22 No.	21 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3		
						0	0	9	0	9	0	9	0	9	0	9	0	9	0		
16	x	22	10 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
17	xxj	11	29 No.	29 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
18	ij	30	18 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
19	xiiij	19	7		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
1	xxv	8	26 No.	25 Dec.	383	2	3	2	3	2	3	2	3	2	3	2	3	2	3		
						9	0	9	0	9	0	9	0	9	0	9	0	9	0		
2	vj	26	14 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
3	xvij	15	3		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		
4	xxv iiij	4	23 No.	22 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3		
						0	0	9	0	9	0	9	0	9	0	9	0	9	0		
5	ix	23	11 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2		
						0	9	0	9	0	9	0	9	0	9	0	9	0	9		

[illegible]

Lunations of the Fifteenth Cycle (line-letter r)

How many days each lunation contains, both in the common year and in the embolismic year, in the expanded table of the fifteenth Cycle, to which is prefixed the small letter r, and to which, of the thirty golden-number Calendars, the fifteenth under the same small letter r corresponds.

(Column headers as on the preceding table.)

[illegible]

[illegible]

Lunations of the Sixteenth Cycle (line-letter q)

How many days each lunation contains, both in the common year and in the embolismic year, in the expanded table of the sixteenth Cycle, to which is prefixed the small letter q, and to which, of the thirty golden-number Calendars, the sixteenth under the same small letter q corresponds.

(Column headers as on the preceding tables.)

[illegible]

[illegible]

Caput XVI (continued) — The *Lunationes* Tables of the Thirty Cycles

Running heads: p. 321 "CAPVT XVI."; p. 322 "CALEND. GREGOR."; p. 323 "CAPVT XVI."

Each leaf carries one Cycle's expanded lunation table (19 golden-number rows).
The shared column-head block reads:

- **AVREI NVMERI** — Golden Numbers
- **EPACTÆ** — Epacts
- **Initium primi mensis Lunaris tam in anno communi, quam in Embolismico** — Beginning of the first lunar month, in both the common and the embolismic year
- **Finis duodecimi mensis Lunaris tam in anno communi, quam in Embolismico** — End of the twelfth lunar month, in both the common and the embolismic year
- **Finis tertijdecimi mensis Lunaris in anno Embolismico** — End of the thirteenth lunar month, in the embolismic year
- **Magnitudo anni Lunaris tam communis quam Embolismici** — Length of the lunar year, both common and embolismic
- **NVMERVS ET ORDO Lunationum totius anni** — Number and Order of the lunations of the whole year (the thirteen lunation columns: *Prima ... Tertiadecima Lunatio* = 1st ... 13th lunation)

Date abbreviations as printed: Ian. = January, No. = November, Dec. = December.

The Seventeenth Cycle (letter p) — printed folio 321

Caption. How many days each lunation contains, both in the common year and in the embolismic, laid out in the table for the **seventeenth** Cycle — to which the small letter **p** is prefixed, and to which, out of the thirty Calendars of the golden numbers, the seventeenth answers under the same small letter **p**.

Golden No	Epa ct	1st-mo. start	12th-mo. end	13th-mo. end	Len gth															1	1	1	1
10	j	31 Dec.	19 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9	0	9				
11	xij	20	8		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2				

[illegible]

Golden No	Epa ct	1st-mo. start	12th-mo. end	13th-mo. end	Len gth	1 1 1 1												
9	xx	12	30 No.	30 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0

The Eighteenth Cycle (letter **n**) — printed folio 322

Caption. How many days each lunation contains, both in the common year and in the embolismic, laid out in the table for the **eighteenth** Cycle — to which the small letter **n** is prefixed, and to which, out of the thirty Calendars of the golden numbers, the eighteenth answers under the same small letter **n**.

Golden No	Epa ct	1st-mo. start	12th-mo. end	13th-mo. end	Len gth	1 1 1 1												
10	*	1 Ian.	20 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
11	xj	21 Dec.	9		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
12	xxij	10	28 No.	28 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
13	ijj	29	17 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
14	xiiij	18	6		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
15	25	7	25 No.	25 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
16	vj	26	14 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
17	xvij	15	3		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
18	xxv ijj	4	23 No.	22 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2
						0	0	9	0	9	0	9	0	9	0	9	0	9
19	ix	23	11		354	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	9	0	9	0	9	0	9	0	9	0	9	0
1	xxj	12	29 No.	29 Dec.	383	2	2	3	2	3	2	3	2	3	2	3	2	3
						9	9	0	9	0	9	0	9	0	9	0	9	0

[illegible]

[illegible]

Twenty-first Cycle (litera k) — printed folio 325

Caption: How many days each lunation contains, in both the common and the embolismic year, in the twenty-first Cycle of the expanded tables — to which the small letter **k** is prefixed, and to which, out of the thirty Calendars of golden numbers, the twenty-first answers under that same small letter **k**.

(Column heads as in the preceding table.)

Golden No.	Epact	Init. 1st month	End 12th	End 13th	Length	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13		13	*	1 Ian.
20 Dec.		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			14	
xj	21 Dec.	9		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29			15	xxij
10	28 No.	28 Dec.	384	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30			16	iiij
29	30	29	30		16	iiij	29	17 Dec.		354	30	29	30	29	30	29	30	29	30			17
29	30	29	30	29		17	xiiiij	18	6		354	30	29	30	29	30	29	30	29			18
30	29	30	29	30	29		18	25	7	25 No.	25 Dec.	384	30	29	30	29	30	29	30			19
29	30	29	30	29	30	29	30	29	30		19	vj	26	14 Dec.		354	30	29	30			20
29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			1	xviiij
29	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30			2	xxix
21 Dec.	384	30	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			3	x
22	10 Dec.		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			4
4	xxj	11	29 No.	29 Dec.	384	30	29	30	29	30	29	30	29	30	29	30	29	30	29			5
30	29	30		5	ij	30	18 Dec.		354	30	29	30	29	30	29	30	29	30	29			6
30	29	30	29		6	xiiij	19	7		354	30	29	30	29	30	29	30	29	30			7
29	30	29	30	29		7	xxiiij	8	26 No.	26 Dec.	384	30	29	30	29	30	29	30	29			8
30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			9
30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			10
29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			11	viiij
Dec.	384	30	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			12	ix
24	12 Dec.		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29			13

12 | xix | 13 | 1 Dec. | 31 Dec. | 384 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29
| 30 | 29 | 30 |

Twenty-second Cycle (litera i) — printed folio 326

Caption: How many days each lunation contains, in both the common and the embolismic year, in the twenty-second Cycle of the expanded tables — to which the small letter **i** is prefixed, and to which, out of the thirty Calendars of golden numbers, the twenty-second answers under that same small letter **i**.

(Column heads as above.)

[illegible]

[Printed p. 327 — Twenty-third Cycle, small letter h]

Column headings, verbatim: **AVREI NVMERI** (Golden Numbers) · **EPACTÆ** (Epacts) · *Initium primi mensis Lunaris tam in anno communi, quam in Embolismico* (Beginning of the first lunar month, in both the common and the embolismic year) · *Finis duodecimi mensis Lunaris tam in anno communi, quam in Embolismico* (End of the twelfth lunar month, in both the common and the embolismic year) · *Finis tertijdecimi mensis Lunaris in anno Embolismico* (End of the thirteenth lunar month, in the embolismic year) · *Magnitudo anni Lunaris tam communis quam Embolismici* (Length of the lunar year, both common and embolismic) · **NVMERVS ET ORDO Lunationum totius anni** (The number and order of the lunations of the whole year: First ... Thirteenth Lunation).

[illegible]

Golden No.	Epa ct	Init. 1st mo.	End 12th	End 13th	Len gth	1 1 1 1 1 2 3 4 5 6 7 8 9 0 1 2 3													
12	xvij	15	3		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
13	xxvi ij	4	23 No.	22 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	0	9	0	9	0	9	0	9	0	9	0	9	0
14	ix	23	11 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
15	xx	12	30 No.	30 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
16	j	31	19 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
17	xij	20	8		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
18	xxijj	9	27 No.	27 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
19	iiij	28	16 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
1	xvj	17	4		353	2	2	3	2	3	2	3	2	3	2	3	2	3	2
						9	9	0	9	0	9	0	9	0	9	0	9	0	9
2	xxvi j	5	24 No.	23 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3
						0	0	9	0	9	0	9	0	9	0	9	0	9	0
3	viiij	24	12		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9
4	xix	13	1 Dec.	31 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2
						0	9	0	9	0	9	0	9	0	9	0	9	0	9

[Printed p. 328 — Twenty-fourth Cycle, small letter g]

How many days each lunation contains, in both the common and the embolismic year, in the twenty-fourth Cycle, set out in the expanded table headed by the small letter **g**, and to which the twenty-fourth of the thirty Calendars of golden numbers, under that same small letter **g**, corresponds.

(Column headings as on the preceding page.)

Golden No.	Epa ct	Init. 1st mo.	End 12th	End 13th	Len gth	1 1 1 1															
						1	2	3	4	5	6	7	8	9	0	1	2	3			
16	*	1 Ian.	20 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
17	xj	21 Dec.	9		354	0	9	0	9	0	9	0	9	0	9	0	9				
18	xxij	10	28 No.	28 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2				
19	iiij	29	17 Dec.		354	0	9	0	9	0	9	0	9	0	9	0	9				
1	xv	18	5		353	2	2	3	2	3	2	3	2	3	2	3	2				
2	xxvj	6	25 No.	24 Dec.	384	9	9	0	9	0	9	0	9	0	9	0	9				
3	vij	25	13 Dec.		354	3	3	2	3	2	3	2	3	2	3	2	3				
4	xviiij	14	2		354	0	0	9	0	9	0	9	0	9	0	9	0				
5	xxix	3	22 No.	21 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2				
6	x	22	10 Dec.		354	0	0	9	0	9	0	9	0	9	0	9	0				
7	xxj	11	29 No.	29 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2				
8	ij	30	18 Dec.		354	0	9	0	9	0	9	0	9	0	9	0	9				
9	xiiij	19	7		354	3	2	3	2	3	2	3	2	3	2	3	2				
10	xxiii j	8	26 No.	26 Dec.	384	0	9	0	9	0	9	0	9	0	9	0	9				
11	v	27	15 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
12	xvj	16	4		354	0	9	0	9	0	9	0	9	0	9	0	9				
13	xxvi	5	24 No.	23	384	3	3	2	3	2	3	2	3	2	3	2	3				

Golden No.	Epa ct	Init. 1st mo.	End 12th	End 13th	Len gth	1 1 1 1 1 2 3 4 5 6 7 8 9 0 1 2 3													
17	x	22	10 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
18	xxj	11	29 No.	29 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2
19	ij	30	18 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
1	xij	19	6		353	2	2	3	2	3	2	3	2	3	2	3	2	3	2
2	xxv	7	26 No.	25 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3
3	vj	26	14 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
4	xvij	15	3		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
5	xxvi ij	4	23 No.	22 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2	3
6	ix	23	11 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2	3	2
7	xx	12	30 No.	30 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3	2

Caput XVI — *Lunationes* of the Thirty Cycles (continued)

Twenty-sixth, twenty-seventh, and twenty-eighth Cycles (line-letters e, d, c)

The six framework columns and the thirteen lunation columns are identical in all three tables on these leaves; their headers translate as follows:

- **AVREI NVMERI** — Golden Numbers
- **EPACTÆ** — Epacts

- Month abbreviations as printed: **Ian.** = January, **No.** = November, **Dec.** = December. A bare number in the "End 12th"/"End 13th" columns means December is carried down from the row above.

Caption. How many days each lunation contains — in both the common year and the embolismic year — in the twenty-sixth Cycle of the expanded tables, to which the small letter *e* is prefixed, and to which, out of the thirty Calendars of golden numbers, the twenty-sixth under that same small letter *e* corresponds.

[illegible]

Golden No.	Epac t	Init.	End 12th	End 13th	Leng th	1 1 1 1															
						1	2	3	4	5	6	7	8	9	0	1	2	3			
14	vj	26	14 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
15	xvij	15	3		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
16	xxvii j	4	23 No.	22 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2			
						0	0	9	0	9	0	9	0	9	0	9	0	9			
17	ix	23	11 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
18	xx	12	30 No.	30 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3			
						0	9	0	9	0	9	0	9	0	9	0	9	0			
19	j	31	19 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
1	xiiij	20	7		353	2	2	3	2	3	2	3	2	3	2	3	2				
						9	9	0	9	0	9	0	9	0	9	0	9				
2	xxiii j	8	26 No.	26 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3			
						0	9	0	9	0	9	0	9	0	9	0	9	0			
3	v	27	15 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
4	xvj	16	4		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
5	xxvij	5	24 No.	23 Dec.	384	3	3	2	3	2	3	2	3	2	3	2	3	2			
						0	0	9	0	9	0	9	0	9	0	9	0	9			
6	viiij	24	12 Dec.		354	3	2	3	2	3	2	3	2	3	2	3	2				
						0	9	0	9	0	9	0	9	0	9	0	9				
7	xix	13	1 Dec.	31 Dec.	384	3	2	3	2	3	2	3	2	3	2	3	2	3			
						0	9	0	9	0	9	0	9	0	9	0	9	0			

Twenty-seventh Cycle — line-letter *d* (printed p. 331)

Caption. How many days each lunation contains — in both the common year and the embolismic year — in the twenty-seventh Cycle of the expanded tables, to which the small letter *d* is prefixed, and to which, out of the thirty Calendars of golden numbers, the twenty-seventh under that same small letter *d* corresponds.

Golden No.	Epact	Init.	End 12th	End 13th	Length	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	14

Twenty-eighth Cycle — line-letter c (printed p. 332)

Caption. How many days each lunation contains — in both the common year and the embolismic year — in the twenty-eighth Cycle of the expanded tables, to which the small letter *c* is prefixed, and to which, out of the thirty Calendars of golden numbers, the twenty-eighth under that same small letter *c* corresponds.

Golden No.	Epact	Init.	End 12th	End 13th	Length	1	2	3	4	5	6	7	8	9	10	11	12	13											
--- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---																				11	j	31 Dec.							
19 Dec.		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29			12										
xij	20	8		354	30	29	30	29	30	29	30	29	30	29	30	29	30	29			13								
xxij	9	27 No.	27 Dec.	384	30	29	30	29	30	29	30	29	30	29	30	29	30	29											
30	29	30		14	iiij	28	16 Dec.		354	30	29	30	29	30	29	30	29	30	29										

| 30 | 29 | 30 | 29 | | | 15 | xv | 17 | 5 | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 |
29 | 30 | 29 | 30 | 29 | | | 16 | xxvj | 6 | 25 No. | 24 Dec. | 384 | 30 | 30 | 29 | 30
| 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 17 | vij | 25 | 13 Dec. | | 354 | 30 |
29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 18 | xvij | 14 | 2 | | 354 |
30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 19 | xxix | 3 | 22 No. |
21 Dec. | 384 | 30 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 1 |
xj | 22 | 9 Dec. | | 353 | 29 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | |
| 2 | xxij | 10 | 28 No. | 28 Dec. | 384 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 |
29 | 30 | 29 | 30 | | 3 | iij | 29 | 17 Dec. | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 |
29 | 30 | 29 | 30 | 29 | | | 4 | xiiij | 18 | 6 | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30
| 29 | 30 | 29 | 30 | 29 | | | 5 | xxv | 7 | 26 No. | 25 Dec. | 384 | 30 | 30 | 29 | 30
| 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 6 | vj | 26 | 14 Dec. | | 354 | 30 | 29
| 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 7 | xvij | 15 | 3 | | 354 | 30 |
29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | | 8 | xxviiij | 4 | 23 No. | 22
Dec. | 384 | 30 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 9 | ix |
23 | 11 | | 354 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | | 10 |
xx | 12 | 30 No. | 30 Dec. | 384 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30
| 29 | 30 |

Caput XVI (continued) — *Lunationes* Tables of the Twenty-Ninth and Thirtieth Cycles; Caput XVII begins

How many days each lunation contains — both in a common year and in an embolismic one — in the twenty-ninth Cycle of the expanded table, to which the small letter b is prefixed, and to which, out of the thirty Calendars of golden numbers, the twenty-ninth (under the same small letter b) corresponds.

Column headings (verbatim, left to right): **AVREI NVMERI** (Golden Numbers) | **EPACTÆ** (Epacts) | *Initium primi mensis Lunar is tam in anno communi, quam in Embolismico* (Beginning of the first lunar month, both in a common and in an embolismic year) | *Finis duodecimi mensis Lunar is tam in anno communi, quam in Embolismico* (End of the twelfth lunar month, in a common and in an embolismic year) | *Finis tertijdecimi mensis Lunar is in anno Embolismico* (End of the thirteenth lunar month, in an embolismic year) | *Magnitudo anni Lunar is tam communis, quam Embolismici* (Length of the lunar year, both common and

embolismic) | **NVMERVS ET ORDO Lunationum totius anni** (The number and order of the lunations of the whole year: 1st through 13th lunation).

[illegible]

[illegible]

(Column headings identical to the preceding leaf: Golden Numbers | Epacts | Beginning of the first lunar month | End of the twelfth lunar month | End of the thirteenth lunar month | Length of the lunar year | number and order of the lunations, 1st through 13th.)

Golden No.	Epact	Beg. 1st mo.	End 12th mo.	End 13th mo.	Length																
						1	2	3	4	5	6	7	8	9	0	1	2	3			
						t	d	d	h	h	h	h	h	h	h	h	h	h			
					4	0	9	0	9	0	9	0	9	0	9	0	9				
8	xx vj	6	25 No.	24 Dec.	38	3	3	2	3	2	3	2	3	2	3	2	3	2			
					4	0	0	9	0	9	0	9	0	9	0	9	0	9			
9	vij	25	13 Dec.		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
10	xv ij	14	2		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
11	xx ix	3	22 No.	21 Dec.	38	3	3	2	3	2	3	2	3	2	3	2	3	2			
					4	0	0	9	0	9	0	9	0	9	0	9	0	9			
12	x	22	10 Dec.		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
13	xx j	11	29 No.	29 Dec.	38	3	2	3	2	3	2	3	2	3	2	3	2	3			
					4	0	9	0	9	0	9	0	9	0	9	0	9	0			
14	ij	30	18 Dec.		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
15	xii j	19	7		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
16	xx iiij	8	26 No.	26 Dec.	38	3	2	3	2	3	2	3	2	3	2	3	2	3			
					4	0	9	0	9	0	9	0	9	0	9	0	9	0			
17	v	27	15 Dec.		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
18	xv j	16	4		35	3	2	3	2	3	2	3	2	3	2	3	2				
					4	0	9	0	9	0	9	0	9	0	9	0	9				
19	xx vij	5	24 No.	23 Dec.	38	3	3	2	3	2	3	2	3	2	3	2	3	2			
					4	0	0	9	0	9	0	9	0	9	0	9	0	9			
1	ix	24	11 Dec.		35	2	2	3	2	3	2	3	2	3	2	3	2				
					3	9	9	0	9	0	9	0	9	0	9	0	9				
2	xx	12	30 No.	30 Dec.	38	3	2	3	2	3	2	3	2	3	2	3	2	3			
					4	0	9	0	9	0	9	0	9	0	9	0	9	0			

2. It is clear from the tables above that every nineteen-year cycle contains seven years of thirteen lunations — the years called embolismic, which I shall discuss in the next chapter. Likewise, a lunar year of twelve lunations

sometimes comprises only 353 days; above, in Chapter 8, Number 1, I called such a year "hollow" [cavum]. An embolismic year, too, occasionally contains only 383 days, which I likewise called hollow. A lunar year, whether common or embolismic, becomes hollow when the transition is made from golden number 19 to golden number 1. For in that case 12 is added to the epact that is in use together with golden number 19, in order to form the following epact, which corresponds to golden number 1 — as I explained above in Chapter 12, Number 14 — so that the first lunation of the year comprises only 29 days, whereas in other years it contains 30. Moreover, an embolismic year becomes hollow when the nineteen-year cycle begins from golden number 1 and epact xix or xviii concurs with golden number 19, as may be seen in tables 8 and 9; or likewise whenever a year whose golden number is 1 is embolismic, because — for the reason just given — the first lunation of that year comprises only 29 days, on account of the addition of 12 to the epact concurring with golden number 19. But I shall write more on this matter in the next chapter, at Numbers 7 and 14. And as for why, in the following thirty tables, the lunations do not always proceed alternately by 30 and 29 days, but several consecutive lunations sometimes occur — now of 30 days, now of 29 — I shall explain this in the next chapter, at Number 15.

[Margin: When the lunar year, whether common or embolismic, becomes hollow — namely, of 353 or 383 days.]

CAPVT XVII. — On the Embolisms, and on what they call the *Saltus* [Leap] of the Moon

Now that I have inscribed all thirty epacts in the Calendar, and have constructed both the expanded table of those same epacts and the table of equation — the latter indeed corrected for many thousands of years, so that in any age it may be known which 19 epacts out of all 30 are to be taken, corresponding to the nineteen golden numbers, for determining the new moons — the proper order seems to require that I also bring forward a few remarks about the embolisms and the *Saltus* of the Moon. For from this it will become still clearer that the epacts have been most correctly placed in the Calendar, and that their Cycle now performs entirely the same office that the Cycle of the golden number, or any other Cycle, once performed. But two things seem to require explanation first. The first is that any lunation is assigned by the computists to the month in which it ends, even if it took its beginning in another month. On this matter there is this little verse:

In quo completur, mensi Lunatio detur. [Let the lunation be given to the month in which it is completed.]

If anyone should ask the reason for this, the following may be offered. While epact * is running, there can be no doubt that the first lunation of the whole year begins on the very Kalends of January, together with the year itself, and must be assigned to that same January, ending on the 30th of January. From this it follows that the second lunation, whose end falls on the last day of February, must be ascribed to February, although it begins on the last day of January. The third, beginning on the Kalends of March and ending on the 30th, must be given to March. Then the fourth to April, whose end falls on the 28th of April, even though it begins on the last day of March. And the fifth to May, which ends on the 28th of May, though it begins on the 29th of April. And so, throughout that whole year, the lunations are to be assigned to the months in which they end, although they begin in others — so that the twelfth lunation, whose end falls on the 20th of December, must be ascribed to December, even though it begins on the 22nd of November. And since a common lunar year contains only 12 lunations, the following lunation — beginning on the 21st of December and ending on the 19th of January — must be called the first of the next year, and therefore assigned to January, the first month of that year; for on the 20th of December the common lunar year of 12 lunar months is already ended. From this it follows that the next lunation, which begins on the 20th day of January, must be assigned to February, in whose 17th day it ends; and therefore the other lunations of the same year, too, must be granted to the months in which they end, even though they take their beginning from others. It is no different in an embolismic lunar year: the last and thirteenth lunation will have its end in December, and the one next following — whether it begins on some day of December or at the beginning of January — must be called the first of the next year. This seems to me to be entirely the reason why all the computists assign the lunations to the months in which they terminate: namely, so that the first lunation of the year — which always has its beginning in December, except when epact * is in use (for that lunation begins on the first day of January) — and its end in January, may be ascribed to the first solar month of the whole year, that is, to January, reason itself so requiring.

[Margin: That the lunation is assigned to the month in which it ends; and why.]

2. In the second place, it must be declared from which epact each cycle of nineteen years takes its beginning — the cycle, that is, in which are contained the 19 epacts of some one line among those 30 set out in the expanded table, corresponding to the nineteen golden numbers. For those

thirty cycles of the expanded table do not begin from the epacts that hold the first place in them and are set under golden number 3, as perhaps someone considering the matter without sufficient attention might suppose. Rather, every nineteen-year cycle of the expanded table takes its beginning always from epact *, and from the first day of January, if * is contained in that cycle; or from epact 1 and from the last day of December, if epact * is not found in the cycle. Now epact * is contained in 19 of the cycles, or lines of the expanded table — namely in the 1st, 2nd, 4th, 5th, 7th, 9th, 10th, 12th, 13th, 15th, 16th, 18th, 20th, 21st, 23rd, 24th, 26th, 27th, and 29th — and therefore each of these cycles takes its beginning from it, under whatever golden number it may be placed. But in the other 11 cycles — namely the 3rd, 6th, 8th, 11th, 14th, 17th, 19th, 22nd, 25th, 28th, and 30th — * is not found; so the beginning of those cycles is then taken from epact 1, under whatever golden number that epact may be found placed. For although in every cycle it might seem free to fix the beginning wherever one pleases, yet since the 19 lunar years are made equal to the same number of solar years — though not in every respect, as was said above in Chapter 8 — it seems fitting that the beginning of the nineteen-year cycle in the epacts be taken there where the Church's custom sets the beginning of the solar year in the Calendar, namely on the Kalends of January, when this can be done; or at any rate near the Kalends. So that, whenever in a nineteen-year cycle epact *, inscribed on the Kalends of January, is in use, the begin-

[Margin: That every cycle of 19 epacts begins either from *, if it is contained in the cycle in question, or from 1, if * is not found in the given cycle.]

[Margin: Which nineteen-year cycles begin from *, and which from epact 1.]

[the begin]ning of the cycle is taken from that epact and not from another, and the new moon that falls on the first day of January is the first in that whole nineteen-year cycle. But it not rarely happens that in the whole span of nineteen years no new moon falls on the Kalends of January, because throughout that whole period epact * is not in use — as is clear from the eleven cycles of the expanded table enumerated above, namely from cycles 3, 6, 8, 11, 14, 17, 19, 22, 25, 28, and 30. In that case the beginning of our cycle cannot be taken from the Kalends of January, nor from epact *, since that epact is not contained in that cycle; rather, the cycle must be begun from the epact nearest to the Kalends of January — either from epact xxix, set against the second day of January, or from the epact that would have to be entered against the last day of December, if the

year began there. In this way the new moon nearest the beginning of the solar year — the one that falls either on the second day of January or on the last day of December — is called the first in that whole cycle. But since a new moon falling on the second day of January is not the first of the whole year but the second (because the preceding lunation, which ends on the Kalends of January itself, is assigned to January and called the first of the whole year, as we wrote a little earlier), we must take the new moon that is then the first of the whole year and is assigned to January, and that is the nearest one — for all the other new moons assigned to January fall, in that cycle, on other days of December, the ones that precede the last day.

Two days, therefore, must be assigned to the beginning of our cycle: the Kalends of January, where epact * is placed, and the day before the Kalends of January [Pridie Cal. Ianuarij], where epact 1 would have to be placed if the solar year began there — just as in other places of the calendar epact 1 is placed immediately above epact *. But since the solar year begins on the first day of January and ends on the last day of December, and the epacts in the calendar cannot preserve the order of the cycle — as we explained in chapter 10, no. 2 — it is not epact 1 (which in the natural order precedes epact * in the calendar) that is set against the last day of December, but epact xx, together with epact 19, marked in a different colour or character. For these two epacts fall, in the natural order, below epact xxj set against the second-to-last day of December, and they are still in use in the month of December, in those years in which the new moons are shown by them — since our epacts change in January, just as the golden numbers do. From this it follows that the beginning of any nineteen-year cycle of our epacts must be taken either from the first day of January and from epact *, when that epact is in use in the nineteen-year cycle, or from the last day of December and from epact 1, when epact * is not found in that cycle.

[Margin: That any nineteen-year cycle begins either from the first day of January or from the last day of December.]

And this is the reason why, in the thirty tables of lunations in the preceding chapter, we began every nineteen-year cycle either from epact * or from epact j, and why the first lunation of the whole cycle, in each table, takes its start either from the Kalends of January or from the last day of December — while all the golden numbers, meanwhile, gave the start to the nineteen-year cycle.

3. Furthermore, so that you may see that those two days must necessarily be appointed for the beginning of each of our nineteen-year cycles, we shall show that the same would have to be done in the golden-number cycle, if it were

written out in the calendar and both equations — that of the solar year and that of the lunar — were preserved. Let us take in hand, then, the old Roman calendar, in which golden number 3 is placed at the first day of January, and from which, right down to our own correction, the beginning of the cycle was always taken — because the equation of the Sun and Moon had never been applied.

[Margin: That the golden-number cycle, before the correction, always began from golden number 3.]

That the beginning of the cycle was always taken from golden number 3 is clearly gathered from this: that from golden number 3 the seven embolismic years were counted, as you will see most plainly from what we shall set out a little below about the embolisms in this same chapter.

Therefore, if on account of the equation of the solar year — the Moon not yet requiring an equation — the several golden numbers must be moved down by one day, golden number 3 will be written against the second day of January, and golden number 14 will be set against the first day, since elsewhere in the calendar it is always placed immediately above golden number 3. So the beginning of the cycle will then be made from golden number 14, and from that same first day of January. But if the golden numbers must be moved down by a further day, golden number 3 will fall on the third day of January and golden number 14 on the second, while the first day will appear empty — because above golden number 14 golden number 6 is placed not immediately, but with an empty day left between, as is clear from chapter 9, no. 5. So the beginning of the cycle cannot then be made from the first day of January, since no golden number is placed there; nor, again, will golden number 14, now assigned to the second day of January, any longer give the beginning, because the lunation beginning on the second day of January, while golden number 14 is running, is the second of that year and not the first, as we taught before. The cycle must therefore then be begun from the golden number that would have to be assigned to the last day of December if the solar year began there — that is, from golden number 6, which in the calendar always stands two days higher than 14. For the lunation then falling on the last day of December is the first of the whole following year; and this is indicated by golden number 5 [?], which shows the new moons in the preceding year and is then assigned to the last day of December — since we suppose it to have descended by two days from the 29th of December, where it is written in the old calendar. And that golden number 5 [?], and not 6, is then to be set against the last day of December — the 6 that in the calendar is always found written above 14 —

the reason is that the golden numbers in the calendar cannot preserve the order of the cycle, as was said in chapter 9, no. 6; and this is plain from the third calendar of golden numbers, whose index letter is M, majuscule.

[Margin: That the nineteen-year cycle of the golden number begins either from the golden number written at the Kalends of January, or from the one that would have to be entered against the last day of December, if the solar year began there.]

Exactly the same would happen if, on account of the equation of the Moon (the solar year then not requiring an equation), the golden numbers in the old calendar had to be moved up by one day. For golden number 11, assigned to the third day of January, would rise to the second day, while golden number 3, placed on the first day, would pass to the last day of December, leaving the first day of January empty. So the cycle could not then begin from the first day of January, since there is no golden number there, nor from the second day of January, for the reason given above, but from the last day of December, from golden number 3, which would then have to be placed there if we began the solar year there. Yet, since we begin the year from the start of January, and the golden numbers in the calendar do not preserve the order of the cycle — as we said in chapter 9, no. 6 — golden number 2 would then be seen placed there, below golden number 13, which would then be assigned to the second-to-last day of December, as is clear from the thirtieth calendar of golden numbers, whose index letter is a, minuscule.

4. You see, then, that the beginning of the cycle of golden numbers is taken from all the golden numbers in turn and successively — now from the first day of January, if some golden number is placed there, now from the last day of December, if the first day of January has no golden number. This happens on account of the equation of the solar and lunar year, since, because of that equation, all the golden numbers can be written in turn on the first day of January and on the last day of December — as plainly appears from the thirty calendars of golden numbers above, in which the same golden numbers occupy various days, corresponding, that is, to the thirty lines of epacts in the expanded table.

But since our cycle of epacts is fixed in the calendar, and epact * always clings to the Kalends of January — so that epact j would have to be placed at the last day of December if the solar year began there — it comes about that the beginning of the nineteen-year cycle of our epacts must always be taken either from epact * or from epact j, as has been shown.

[Margin: That the beginning of the golden-number cycle is taken successively from all the golden numbers, if the equation of the solar and lunar year is applied.]

5. The Alexandrians, moreover, always began their cycle from the last day of the year, which corresponds to the 28th day of our month of August; for at the first day of their year — that is, of the month Thoth, which corresponds to the 29th of August — they placed no golden number, because at that time no new moon fell on the first day of their year, but on the last, that is, on the 35th day of the month Mesore, which we have said corresponds to the 28th of August, where golden number 19 was placed, which was then equivalent to golden number 1. For at once on the next day, which gave the beginning to the following year, golden number 1 was taken in place of golden number 19, and so their cycle began from golden number 1. But in the old ecclesiastical calendar, while golden number 3 was running, the new moon fell — by the usage of the Church — on the first day of January, where that golden number 3 was placed; and therefore the cycle of the golden number always took its beginning from it, before the correction of the year, as we said above.

[Margin: Why every nineteen-year cycle of epacts always begins from * or from epact j.]

[Margin: That among the Alexandrians the golden-number cycle always began from the last day of their year, and from golden number 1.]

6. With this settled, let us take up the explanation of the embolisms. An embolism, then, is a lunar year in which thirteen lunations are contained — that is, 384 or 383 days, as we shall soon say. Nor should it seem strange to anyone that in a single year, which in the calendar contains only 365 days, there can be thirteen lunations, which make up 384 or 383 days. For since it was said above that lunations are assigned to the months in which they end — so that every lunation that begins in December and ends on any day of January is to be assigned to January and called the first of the whole year — it can happen that in certain years, after that first lunation, twelve whole lunations still remain before we come to the first lunation of the next following year; namely, if after the first lunation of some year there still remain 354 or 353 days, which are just enough to make up the number of days of twelve lunations. When this happens, there are thirteen lunations in that lunar year, and it is called an embolismic year, comprising 384 or 383 days, although the solar year in the calendar consists of only 365 days. But when, after that first lunation, only eleven whole lunations remain, only twelve lunations are contained in that lunar year, and it is called a

common year, containing 354 or 353 days, although the solar year in the calendar comprises 365 days.

[Margin: What an embolism is. In what way thirteen lunations can be contained in one year.]

7. And since the solar year written in the calendar, of 365 days, exceeds the common lunar year — which for the most part comprises 354 days (for it rarely comprises only 353) — by eleven days, we shall easily recognize which years, and how many, in any nineteen-year cycle are embolismic, that is, of thirteen lunations. For whenever, from those eleven days which remain in each solar year after twelve lunations have been completed, a sum of 30 is collected — or more, or even less, that is 29, as happens in the last, or nineteenth, year of the cycle — thirteen lunations will be completed in that year, and the year itself will be embolismic; because from that sum of days a single lunation of 30 days is made up, besides the twelve ordinary ones — except in the last year of the cycle, in which the sum of 29 days gathered gives a single lunation of 29 days, which, added to the other twelve lunations completed before it, makes thirteen lunations in that year. And this happens in any cycle only seven times, namely in the years 3, 6, 9, 11, 14, 17, and 19 of every nineteen-year cycle, which are all — and the only ones — embolismic, as is clear from the thirty tables of lunations above. For in each of them are found seven years of thirteen lunations; and the reason for this is as follows.

[Margin: Why in every nineteen-year cycle the years 3, 6, 9, 11, 14, 17, and 19 are embolismic.]

In the first three years of the cycle, eleven days are left over three times, which make 33 days; of these, 30 are given to the thirteenth, or embolismic, lunation of the third year, and 3 days still remain. These, joined to the three-times-eleven days remaining in years 4, 5, and 6, make up 36 days, of which 30 are again given to the embolismic, or thirteenth, lunation of the sixth year, and 6 days still remain. These, with the three-times-eleven days remaining in years 7, 8, and 9, make 39 days. From 30 of these, then, the embolismic lunation of the ninth year is completed; the remaining 9 days, together with the twice-eleven remaining in years 10 and 11, make up 31 days, of which 30 are assigned to the embolismic lunation of the eleventh year; and the 1 day left over, with the three-times-eleven days remaining in years 12, 13, and 14, makes 34 days, of which 30 go to the embolismic lunation of the fourteenth year; and the remaining 4 days, with the three-times-eleven surplus days in years 15, 16, and 17, make up 37 days, of which 30 complete the embolismic lunation of the seventeenth year; but the

remaining 7 days, with the twice-eleven surplus days in years 18 and 19, make 29 days, for the embolismic lunation of the nineteenth and last year. For one of the seven extraordinary lunations must necessarily comprise only 29 days, since in nineteen years the eleven days remaining in each year make up 209 days, which yield six lunations of 30 days each and one of 29 days — because it lacks one day to complete the number of 30. For 210 days would make seven lunations of 30 days.

[Margin: Why in a nineteen-year cycle one of the seven extraordinary lunations must contain only 29 days.]

Thus an embolismic year whose lunation contains 30 days will comprise 384 days, while one that has an embolismic lunation of 29 days will contain 383 days — because the 354 days of the twelve lunations, together with the 30 days of the embolismic lunation, make 384 days, but with the 29 days of the embolismic lunation make only 383.

[Margin: When an embolismic year is of 384 days, and when of 383.]

8. And this is the natural order of the seven embolisms contained in any nineteen-year cycle: that the first six embolismic lunations should each contain 30 days, while the seventh and last should contain only 29. This order, however, is usually altered, so that it is not always the seventh embolismic lunation that is of 29 days, but sometimes some other — the lunations alternating between 30 and 29 days requiring it so — because the nineteen-year cycle does not always begin from golden number 1, but from some other. For only two nineteen-year cycles of epacts, out of all thirty in the expanded table — the ones represented by lines 8 and 9 of that table, prefixed with the capital letters D and C — take their beginning from golden number 1. So in those cases the nineteenth year, which is the seventh embolismic year, will contain an embolismic lunation of 29 days. But in the other

[Margin: That only two nineteen-year cycles, out of all thirty in the expanded table, have the seventh embolismic lunation of 29 days.]

cycles the seventh embolismic year will have an embolismic lunation of 30 days, and the embolismic lunation of 29 days will be assigned to some other embolism — as will become clear from what we shall say a little later in this same chapter, once we have first explained somewhat more fully how these seven embolisms stand in each nineteen-year cycle of our epacts, which always begins either from epact * or from epact j, as has been taught above.

9. Whenever, then, the first lunation of some year ends on one of the first eleven days of January (and we have shown above, in no. 1 of this chapter, that every lunation ending in January, even on its first day, is assigned to January and is the first of the whole year), that year is necessarily embolismic. For if the first lunation ends on the 11th of January, there will remain in that year, up to the end of December, 354 days, in which twelve more lunations can occur; so that year will comprise thirteen lunations and will therefore be embolismic. But if the first lunation ends before the 11th of January, more than 354 days will remain in that year up to the end of December; and so twelve more lunations can occur in them, and some days besides will remain, or at least one — and therefore that year too will be embolismic, since it comprehends thirteen lunations.

[Margin: That the first lunation of an embolismic year ends on one of the first eleven days of January, and why.]

From this it follows that these eleven epacts — xix, xx, xxj, xxij, xxiiij, xxv, 25, xxvj, xxvij, xxviiij, xxix (we count xxv and 25 as one epact) — placed on the next eleven days after the Kalends of January, are always embolismic; so that a year whose epact is one of those eleven, whatever golden number is then running, is embolismic — because a lunation beginning in January from one of those epacts is the second of that year, while the first, preceding it, began in December and was completed on one of the first eleven days of January.

[Margin: That eleven epacts are always embolismic — that is, that the year is embolismic in which one of them runs together with any golden number whatever — and which those epacts are.]

From this, again, it is gathered that in any embolismic year the thirteenth, or last, lunation necessarily ends on one of the last eleven days of December, to which these epacts are assigned: *, xxix, xxviiij, xxvij, xxvi, xxv, 25, xxiiiij, xxiiij, xxij, xxj, xx, 19 — because if some lunation ends on any of those eleven days (except the last), the following lunation, which is the first of the next year after the embolism, begins from one of these epacts: xxix, xxviiij, xxvij, xxvj, xxv, 25, xxiiiij, xxiiij, xxij, xxj, xx, 19, which occupy the later ten days of December and are repeated in the same order after the first day of January. This is proof that, throughout the whole year whose last lunation ends on one of the later eleven days of December, that epact was in use from which the first lunation of the following year begins — that is, the one that, similar to this, is placed against one of the eleven days after the first of January. Since, then, all the epacts set against the first eleven days after the first of January are embolismic, as we said a little earlier, it is clear that a year whose last lunation ends on one of the later eleven days of December is

embolismic. Only when the last lunation of an embolismic year, while epact xix is running, ends on the last day of December (which indeed happens when epact xix and golden number 19 do not run together) does the first lunation of the following year begin on the first day of January, and from epact *, which is not embolismic, and not from epact xix, which is embolismic. The reason for this is that the year ends on the last day of December, and epact xix then changes, in the following year, into epact *. But if the year did not close on the last day of December, epact xix would have to be written against the day that now corresponds to the first of January — in the natural order, that is, below epact xx affixed to the last day of December — and so the first lunation after the embolismic year would then also begin from epact xix, which is embolismic.

[Margin: That the thirteenth lunation in an embolismic year ends on one of the last eleven days of December, and why.]

[Margin: That the first lunation of the year following an embolism always begins from some embolismic epact — except in the embolism in which epact xix does not run together with golden number 19 — and why.]

10. And so that it may appear more plainly that these eleven epacts — xix, xx, xxj, xxij, xxiiij, xxv, 25, xxvi, xxvii, xxviii, xxix — are all, and the only ones, always embolismic, all thirty lines of the epacts in the expanded table must be diligently inspected and considered. For in each of them you will always find seven of those eleven epacts placed at positions 3, 6, 9, 11, 14, 17, and 19 from epact * — if epact * is contained in the line taken — or from epact 1, if epact * is not found in the line taken. Since, then, every nineteen-year cycle of our epacts takes its beginning either from epact * or from epact 1, and in every cycle only these seven years — the third, sixth, ninth, eleventh, fourteenth, seventeenth, and nineteenth — are embolismic, as has been said, it is plainly concluded that those eleven epacts we have named, assigned to the eleven days of January following the first day, are embolismic. The same is gathered still more evidently from the thirty tables of lunations in the preceding chapter, in which all those eleven epacts have thirteen lunations and are therefore embolismic — and precisely in the aforesaid seven years; whereas the other epacts comprise only twelve lunations.

[Margin: How it may be recognized, from the expanded table and from the thirty tables of lunations, that the eleven epacts here enumerated are all — and the only ones — always embolismic, and that the seven years here enumerated are, in every nineteen-year cycle, all, and the only ones, embolismic.]

11. To these eleven embolismic epacts must sometimes be added epact xviii. For this too is embolismic in the year in which the golden number is 19 — which happens in only one cycle out of all thirty cycles of the expanded table, namely in the ninth, prefixed with the capital letter C. For in that cycle alone epact xviii occupies the nineteenth place from epact *, from which that cycle begins; and it has been shown above that the nineteenth year of any cycle is embolismic. In no other cycle is epact xviii found in an embolismic position — that is, at 3, 6, 9, 11, 14, 17, or 19 from epact * or from epact j, which is the beginning of the cycle.

Two reasons can be given why epact xviii is then embolismic. Let the first be this. When epact xviii and golden number 19 run together, 12 must be added to it, so that epact xxx, or *, of the following year is produced, as we showed in chapter 12, no. 14. So the last lunation of that year, in which epact xviii together with golden number 19 is in use, ends on the last day of December and must therefore be assigned to December. From this it follows that in that same year thirteen lunations are contained, of which the first ends on the 12th of January, having its beginning on the 14th of December, from epact vii, which was in use in the previous year. The twelfth lunation of the same year closes on the 2nd of December, and the thirteenth on the last day of the same month. Let the second reason be this. The year in which epact xviii and golden number 19 run together is the last of the nineteen-year cycle, as is clear from that ninth line of the expanded table, which has the capital letter C. So in that year the last, embolismic lunation will contain only 29 days, as we said above in no. 8. Therefore, since its first lunation ends on the 12th of January, 353 days still remain, which are enough to fill out twelve lunations, of which the last comprises only 29 days; and thus that year, containing thirteen lunations, will be embolismic and will comprehend only 383 days.

But when epact xviii runs together not with golden number 19 but with any other, 12 are not added to it,

[Margin: That the year in which epact xviii and golden number 19 run together is also embolismic, and why.]

[Text continues in the following section.]

but only 11 are added, so that epact xxix of the following year is obtained. Therefore, when the twelfth lunation of the year has ended on 2 December — epact xviii being in use — the first lunation of the following year will begin on 3 December and will end on the Kalends of January [1 January]. For this reason that earlier year, whose epact xviii will be common, will comprehend only 12

lunations, whereas the later year will be embolismic, of 13 lunations; for its epact will be xxix, which we said above is embolismic.

[Margin: The year in which epact xviii does not run together with golden number 19, and why it is not embolismic.]

Accordingly those eleven epacts — xix, xx, xxi, xxii, xxiii, xxiiii, xxv, 25, xxvi, xxvii, xxviii, xxix — set against the next 11 days that follow the first day of January, are always embolismic, with whatever golden numbers they run together. But epact xviii, set against 13 January, is never embolismic unless golden number 19 is used together with it. All this is perfectly clear from the 30 tables of lunations of the preceding chapter. For in the ninth table alone you see epact xviii, when running with golden number 19, have 13 lunations, whereas in all the others it has only 12. Hence epact xviii may be called ambiguous, or indifferent, since it is now embolismic, now not embolismic — while all the other epacts are perpetually either embolismic or common.

12. In the old Calendar these seven golden numbers were embolismic: 2, 5, 8, 11, 13, 16, 19 — as Campanus [Campanus of Novara] rightly teaches, though other computists differ somewhat from him.

[Margin: Which seven golden numbers were embolismic in the old Calendar.]

For since all [the epacts] are placed in the Calendar next to some of the 11 days that immediately follow the Kalends of January — that is, between the first day and the thirteenth of January — just as our 11 embolismic epacts are, the lunation most recently ended in the month of January before any of those 7 golden numbers (namely on the second, fourth, fifth, seventh, eighth, tenth, or eleventh day) will be the first of the whole year. After it, at the very least 354 days remain, which are enough to fill out the other 12 lunations, so that that year comprehends 13 lunations, the second of which takes its beginning in January. Therefore the year whose golden number is any of those seven will be embolismic.

[Margin: That in the old Calendar the cycle of the golden number necessarily took its beginning from 3.]

And since only seven years in any nineteen-year cycle are embolismic — namely the 3rd, 6th, 9th, 11th, 14th, 17th, and 19th — because in these alone the surplus days (which we said were left over in each solar year) can make up one extraordinary lunation, as we stated at no. 7 — it plainly follows that the cycle of the golden number in the old Calendar always took its beginning from golden

number 3, as we said above at no. 3. This is because those seven embolismic golden numbers, which we adduced a little earlier, counting from golden number 3 alone as the starting point, occupy the third, sixth, ninth, eleventh, fourteenth, seventeenth, and nineteenth places, as appears in this little table:

Ordo annorum Cycli [Order of years in the cycle]	1	2	3	4	5	6	7	8	9	10
Cyclus aurei numeri [Cycle of the golden number]	3	4	5	6	7	8	9	10	11	12
Aur. num. Embolifm. [Embolismic golden number]			5			8			11	1
Ordo annorum Cycli [Order of years in the cycle]	1	1	1	1	1	1	1	1	1	1
Cyclus aurei numeri [Cycle of the golden number]	1	1	1	1	1	1	1	1	1	2
Aur. num. Embolifm. [Embolismic golden number]	1			1			1		2	

[Margin: That in the old Calendar the cycle of the golden number could have had its beginning from no other number than 3.]

Moreover, that in the old Calendar the cycle of the golden number could have had its beginning from no number other than 3 will likewise become clear as follows. If golden number 3 is set as the first in the cycle, 11 days are left over in that year after the twelfth lunation; and 22 in the second year, with golden number 4 running; and 33 in the third year, with golden number 5 running — and therefore golden number 5 will be embolismic. By the same reasoning these golden numbers will be embolismic: 8, 11, 13, 16, 19, 2 — as Campanus held, and as the reckoning itself requires; for when these golden numbers are running, the first lunation of the year always ends on some one of the first 11 days of January, which is necessarily required if the year is to be able to be embolismic, as we said at no. 9. This would by no means come about if some other golden number were set as the first in the cycle. For if, say, golden number 1 were called the first, 11 days would then be left over; and with golden number 2 running, 22 would be left over; and 33 with golden number 3 running. And so golden number 3 would be embolismic. By the same reasoning golden numbers 6, 9, 11, 14, 17, 19 would be embolismic — which is false, and contrary to Campanus, most practised in this

matter, and repugnant to reason, since none of those 7 golden numbers, except 11 and 19, comprehends 13 lunations, as is evident and clearly established from the table of the lunations of the cycle of the old golden number, which we shall set out a little below. Therefore golden number 1 cannot be the first in the cycle; and for the same reason no other but 3 can be the first.

13. Now it is of no great importance which of the 13 lunations of an embolismic year is to be called the extraordinary, or embolismic, one — provided only that it is not the Paschal lunation, and that the magnitudes of the other 12 lunations, as the cycle requires, remain intact and unimpaired so far as can be: namely, that they be constituted alternately of 30 and 29 days.

[Margin: Which of the 13 lunations of an embolismic year is to be called embolismic.]

That this may be done more correctly, the following rule must be kept. Whenever, in an embolismic year, the last (or 13th) lunation contains 30 days, we shall call it the embolismic, or extraordinary, one — because then the 12 preceding lunations contain alternately 30 and 29 days, as the reckoning of the cycle requires.

[Margin: Which embolismic epacts have a 13th lunation of 30 days, and [make the year] embolismic.]

This happens when any of these embolismic epacts — xix, xx, xxi, xxii, xxiii, xxiiii — is in use, to which epact 25 (marked by a different character or colour) is to be added, as is manifest from the 30 tables of lunations of chapter 16 — provided that epact xix and golden number 19 do not run together. For then the 13th lunation of the year comprises only 29 days, as occurs in the 8th line of the expanded table, to which the capital letter D is attached, and to which the 8th of the 30 tables of lunations of the preceding chapter corresponds.

[Margin: When the embolismic epacts, whose 13th lunation is of 30 days, have a first lunation of the year of 29 [?] days.]

But if it should happen that those epacts are used together with golden number 1 — as occurs in lines 15, 16, 17, 18, 19, and 20 of the expanded table, which are marked with the small letters r, q, p, n, m, l, and likewise in the 6 corresponding tables of lunations —

[p. 340]

— corresponding (excepting epact 25, of a different character or colour, which can never run together with golden number 1, since it can run only with the larger golden numbers, namely those greater than 11), then both the first lunation of the year and the second will contain only 29 days. For since at that point 12 are added to the epact of the preceding year, which runs with golden number 19, so that the epact of the other year is produced, running with golden number 1 — as we showed at chapter 12, no. 14 — the first lunation of the year is necessarily made of only 29 days. And it happens that three continuous lunations are constituted of 29 days, namely those two first ones of the embolismic year, and the last of the preceding common year.

Therefore the first lunation of 29 days could indeed then be called embolismic, since it stands midway between two others of the same number of days; and rightly could only 29 days be assigned to the embolismic lunation of that year, seeing that the other 6 embolismic lunations of that cycle comprise 30 days, and that embolismic year comprehends only 383 days. Nevertheless, lest the other lunations of that year should disturb the order of 30 and 29 days, and lest the last, ordinary lunation — which is always wont to be of 29 days — should contain 30, it was decided to establish the last lunation, of 30 days, as the embolismic one; just as, after the manner of the old computists, one day is added to the embolismic lunation of that year (which ought to be of only 29 days), the day being subtracted from the first lunation of the year on account of the addition of 12 to the epact running with golden number 19. This subtraction the computists have called the Leap of the Moon, of which we shall say a little more below. Yet everyone is free, if he prefers, to call the first lunation, of 29 days, the embolismic one, since no absurdity follows from this.

[Margin: Epacts xviii and xix, running together with golden number 19, have a 13th lunation that is embolismic and of 29 days.]

Now when the thirteenth lunation of an embolismic year contains only 29 days, and that embolismic year is the last in the cycle — which comes about when both epact xix and golden number 19, and epact xviii and golden number 19, run together (which happens only twice in the whole period during which all 30 expanded tables of the cycle are used; namely when lines 8 and 9 of the same table, which are marked with the capital letters D and C, and to which the 8th and 9th tables of the lunations correspond, are in use) — then that last lunation of the embolismic year will be called embolismic, because the preceding 12 lunations are alternately of 30 and 29 days, and the last embolismic lunation in the cycle

must contain only 29 days, as is established from what we said above, since the other six embolismic lunations of that cycle comprise 30 days.

[Margin: Which embolismic epact has a first lunation of the year that is embolismic and of 29 days.]

But whenever the 13th lunation comprises only 29 days, while that embolismic year is not the last in the cycle — if the first lunation is likewise constituted of 29 days (which happens whenever any of these epacts — xxv, xxvi, xxvii, xxviii, xxix — and golden number 1 run together, as is evident in lines 10, 11, 12, 13, 14 of the expanded table, which have attached the capital letters B, A and the small letters u, t, f, and likewise in the 5 corresponding tables of lunations) — then that last lunation of 29 days will not be reckoned embolismic, but rather the first of that year, likewise of 29 days. For since then the last lunation of the preceding year too consists of only 29 days, not without reason will the first lunation of the following year, of 29 days, be called extraordinary and embolismic, since the other 12 that follow proceed alternately through 30 and 29 days — especially since that embolismic lunation ought to contain only 29 days, because the other six of the same cycle contain 30.

[Margin: When the same embolismic epacts, of which we have just spoken, have a second lunation that is embolismic and of 30 days.]

But if the first lunation is not of only 29 days, but both the first and the second comprise 30 days — as happens with any of those epacts we mentioned running (xxv, xxvi, xxvii, xxviii, xxix) with some golden number other than 1, as is plain from the 30 tables of lunations above — then the second lunation, of 30 days, will most rightly be called embolismic and extraordinary, since the other 12 preserve alternately the order of 30 and 29 days. Nor indeed ought it to seem strange to anyone that we do not always place the embolismic lunations in the same position and month; for these fall naturally according to the reckoning of the cycle, as we have explained, and were assigned various places and months by the old computists as well.

[Margin: The Leap of the Moon among the computists — what it is in common lunar years.]

14. Furthermore, whenever, on account of the addition of 12 to the epact running with golden number 19, one day is subtracted from the first lunation of a common lunar year, so that that year comprehends only 353 days — as happens in cycles 1, 2, 3, 4, 5, 6, 7, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30 of the expanded table, which have prefixed the capital letters P, N, M, H, G, F, E and the small

letters k, i, h, g, f, e, d, c, b, a, as may be seen in the corresponding tables of lunations (for in all these, and these alone, the year in which the golden number is 1 is common, and the first lunation of that year contains 29 days) — that subtraction is customarily called by the computists the

[Margin: When it can be said that in an embolismic year a leap of the Moon occurs.]

LEAP OF THE MOON: because, since in truth the lunar year consists of 354 days, one day is taken from it and assigned to the last embolismic year, so that it may contain 384 days and the individual 7 embolismic lunations may be constituted of 30 days — whereas the last embolismic year ought by its nature to comprise only 383 days, and its last embolismic lunation only 29 days. So that, on account of this subtraction, the Moon in the Calendar seems in a way to leap by one day, since that first lunation is constituted of only 29 days, though of itself it ought to comprise 30.

By the same reasoning, when in an embolismic year the first lunation, of 29 days, is embolismic, and the other 12 are constituted alternately of 30 and 29 days — as happens in cycles 10, 11, 12, 13, and 14 of the expanded table, which have prefixed the capital letters B, A and the small letters u, t, f, as is manifest in the corresponding tables of lunations — one might rightly say that a leap of the Moon occurs in that lunation: because, since the last lunation of the preceding year is of 29 days, the first lunation of the following embolismic year ought to be constituted of 30 days. So, since one day is subtracted from it and it is made embolismic, and the day removed is added to the last embolismic lunation of that same cycle so that it becomes 30 days — which otherwise ought to comprise only 29 — the Moon seems in a way even then to leap by one day in the Calendar.

Finally, when in an embolismic year the two first lunations comprehend only 29 days — as happens in cycles 15, 16, 17, 18, 19, and 20 of the expanded table, as may be seen in the corresponding tables of lunations — we shall also be able to say that a leap of the Moon occurs then in the first lunation, because from it, which ought to have 30 days, one day is taken and added to the last embolismic lunation of that cycle, so that it may contain 30 days, though it ought to comprise only 29.

Indeed, when in the last embolismic year of some cycle the thirteenth lunation is embolismic, of only 29 days — as occurs in cycles 8 and 9 of the expanded table, of the capital letters D, C, and in tables 8 and 9 of the lunations — one might not unreasonably think that then too a leap of the Moon occurs in a way:

[p. 341]

because, since the twelfth lunation of that year consists of 29 days, the following thirteenth ought, according to the reckoning of the cycle, to be constituted of 30 days, and the subsequent first lunation of the other year of only 29. Since, therefore, that lunation contains only 29 days, one day is taken from it and added to the first lunation of the following common year, so that it is made 30 days — which otherwise, as has been said, ought to be only 29 days.

[Margin: Which embolismic years contain only 383 days, and which common lunar years only 353 days.]

And all these embolismic years, in which a leap of the Moon occurs, contain only 383 days, while all the rest comprehend 384; but the common years, in which a leap of the Moon occurs, are constituted of only 353 days, while all the rest of 354, as is manifest from the 30 tables of lunations above.

15. From what we have said it can be made plain that a leap of the Moon occurs precisely when two or three continuous lunations of 29 days are strung together in the Calendar, and never otherwise. This indeed always happens when the golden number is 1, whether that lunar year be common or embolismic; because 12 are added to the epact of the preceding year running with golden number 19, so that the epact of the following year, running with golden number 1, is produced, as was said at chapter 12, no. 14. Two embolismic years are excepted, those of epacts xix and xviii running together with golden number 19. For in these a leap of the Moon occurs while golden number 19 is running, and not 1, as is clear from the 8th and 9th tables of the lunations.

[Margin: That a leap of the Moon always occurs when the golden number is 1, otherwise never, except in the embolismic years of epacts xix and xviii.]

I am not unaware that this leap of the Moon is little approved by most people, on the ground that no such leap at all takes place in the heavens. Nevertheless, since the reckoning of each cycle requires that one day be at times taken from one lunation and added to another, we have been unwilling to depart from the usual manner of speaking of the computists. Yet let everyone be free to speak in this matter as he wishes, provided only that the thing itself be rightly understood and explained.

[Margin: Why the leap of the Moon displeases most people.]

Hence too it is gathered that, on account of the embolisms and the leap of the Moon, the lunations do not always proceed alternately by 30 and 29 days, as their

condition and nature seem to require; but that sometimes two continuous lunations occur, now of 30, now of 29 days — indeed, at times three of 29 days — as is clearly established from the tables of lunations above. And, what may seem more surprising, it can happen in a bissextile year, on account of the intercalary day, that three or four continuous lunations comprehend 30 days.

[Margin: That, because of the embolisms and the leap of the Moon, it sometimes happens that two or three continuous lunations are of 29 days, and two, three, or four of 30 days.]

For when any of these epacts is running — *, xxix, xxviii, xxvii, xxvi, xxv — both the first and the second lunation of the year (provided the golden number is not 1) contain 30 days. The third lunation, ending either on the last day of February or on some one of the first five days of March, by its nature comprises 29 days, but on account of the bissextile an intercalary day is added to it, so that it too becomes 30 days, even though in the Calendar it contains only 29, since the intercalary day is not written in it. Since, then, the fourth lunation, having its beginning on some one of the first six days of March, also contains 30 days, it is clear that four continuous lunations then comprise 30 days. But if any of the aforesaid epacts runs with golden number 1, the first lunation of the year will indeed contain only 29 days, but the following three, if the year is bissextile, will comprise 30 days. Indeed — what may seem more absurd — a lunation beginning in February from any of these epacts — xxiiii, xxiii, xxii, xxi, xx, xix, xviii, xvii, xvi, xv, xiiii, xiii, xii, xi, x, ix, viii, vii, vi, v — which comprises 30 days in the Calendar, comes in a bissextile year to be of 31 days, on account of the intercalary day added to it.

But this, which has been said about two or more continuous lunations of 29 and 30 days, ought not to be reckoned novel or absurd, since the reckoning of each cycle requires it, and the same was done among the old computists in the cycle of the golden number of the Council of Nicaea [Nicaea], which was in force right up to this Gregorian correction, as is evident from the table set out below, in which all the lunations of the golden numbers of the old Calendar are described, just as in the 30 tables above the lunations of the epacts were expressed, as they occur in the 30 nineteen-year cycles. And from this same table it is clear that the seven embolisms of the whole cycle, which begins from golden number 3, fall in those years of the cycle into which, according to our epacts, we showed above that they fall. It is likewise established that golden number 19 makes three continuous lunations — namely the seventh, eighth, and ninth — of 29 days; while golden number 11, if the year is bissextile and therefore the lunation of the month of

February is increased by one day, exhibits the first four lunations of the year as of 30 days. Finally, golden numbers 1, 2, 4, 5, 7, 8, 9, 10, 12, 13, 15, 16, 18, 19, which in the Calendar have their lunations beginning in the month of February of 30 days, contain in bissextile years 31 days.

[Margin: That it is neither novel nor absurd that two, or more, lunations in succession should sometimes be of 29 or of 30 days.]

There follows a Table of the Lunations of the golden numbers described in the old Calendar.

Table: How many days each lunation of the golden numbers contains in the old Calendar, both in the common year and in the embolismic year

(Quot dies Lunatio quælibet aureorum numerorum contineat in Calendario veteri tam in anno communi, quam in Embolismico.)

The head of the numeric block is titled **NVMERVS ET ORDO Lunationum totius anni** — "The number and order of the lunations of the whole year." Its thirteen sub-columns are, in order, *Prima Lunatio ... Tertiadecima Lunatio* (First Lunation ... Thirteenth Lunation). Common years (length 354/383) fill only the first twelve; embolismic years (length 384) fill all thirteen. All date cells are transcribed exactly as printed: a bare day-number where the source prints no month, and with the printed abbreviation where present (Ian. = January, No. = November, Dec. = December).

Gol den no.	Begin. 1st lunar month	End 12th lunar month	End 13th lunar month (embol.)	Length lunar year	
3	1 Ian.	20 Dec.	—	354	29
4	21 Dec.	9	—	354	29
5	10	29 No.	28 Dec.	384	29
6	29	17 Dec.	—	354	29
7	18	6	—	354	29
8	7	26 No.	25 Dec.	384	30
9	26	14 Dec.	—	354	29
10	15	3	—	354	29
11	4	23 No.	22 Dec.	384	30

Gol den no.	Begin. 1st lunar month	End 12th lunar month	End 13th lunar month (embol.)	Length lunar year	4
12	23	11 Dec.	—	354	29
13	12	30 No.	30 Dec.	384	29
14	31	19	—	354	29
15	20	8	—	354	29
16	9	28 No.	27 Dec.	384	29
17	28	16	—	354	20 [recte: 29]
18	17	5	—	354	29
19	6	24 No.	23 Dec.	383	30
1	24	12 Dec.	—	354	29
2	13	1 Dec.	31 Dec.	384	29

16. Suppose someone asks why it is that these lunations of the old Calendar do not correspond in every respect to the lunations of the first Table of Lunations in the preceding chapter, nor the golden numbers of that same old Calendar, set out in chapter 9, to the golden numbers of the first Calendar of golden numbers in chapter 15 — even though we hold that both the first Table of Lunations and the first Calendar of golden numbers agree with the times of the Council of Nicaea, just as the old Calendar does. The answer is that this arises from resolving the epacts into golden numbers. For since the epacts are so arranged in the Calendar that they make the lunations alternate between 30 and 29 days, it follows that the epacts of the time of the Council of Nicaea — the indicators of the new moons, comprised precisely in the first line of the expanded table — when they are resolved into golden numbers, display those golden numbers distributed through the days of the months in the same order in which you see them arranged in the first Calendar of golden numbers under the capital letter **P**; and with this arrangement the first Table of Lunations of the preceding chapter agrees. That this arrangement does not agree entirely with the golden numbers of the Council of Nicaea is no surprise. For since, on account of the embolisms and the *Saltus Lunæ* [leap of the Moon], the order of the lunations is interrupted, as we said at Num. 15 — and since the embolismic lunations and the *Saltus Lunæ* are not assigned to the same lunar months by all authorities — it comes about that the interruption of the lunations alternating between 30 and 29 days does not fall in

the same lunar months in every author. From which it follows that the golden numbers too are allotted one arrangement in the Calendar by one author and another by another. This is exactly what happens in our Cycle of epacts, if it is compared with the Cycle of the golden number in the old Calendar. And indeed, if we care to examine the matter more attentively, we shall find that the golden numbers of our first Calendar — which we hold to agree with the times of the Council of Nicaea — where they differ from the golden numbers of the old Calendar, generally indicate the new moons more correctly than the golden numbers of the old Calendar do, as the following little table shows. There we have computed the mean new moons for those years and months in which the golden numbers in our first Calendar disagree with the golden numbers of the old Calendar. We have taken the years next following the year 532, since from then on, by the practice of the Church, the golden numbers indicated the new moons more correctly, as was said at chapter 11, Num. 5. The twelve places in which the golden numbers of our first Calendar under the capital letter **P** (chapter 15) differ from the golden numbers of the Council of Nicaea are these. In February the golden Numbers **19** and **8** in our Calendar show the new moons one day later than in the old Calendar. The golden number **19** does the same in July, August, September, October, November, and December. Again, our golden number **16** at the end of September and of November, and likewise the golden number **5** at the beginning of October and at the end of November, show the new moons one day earlier than in the old Calendar. In the other places of the Calendar no difference at all is seen between the golden numbers of the two Calendars — so that for the Paschal new moons (which is the chief point) they keep exactly the same days in both Calendars. But here now is the promised little table.

[Margin: Why the Epacts in the expanded table do not display, for the times of the Council of Nicaea, the golden numbers as they are arranged in the old Calendar.]

[Margin: The 12 places in which the golden numbers of the new Calendar differ from the golden numbers of the old Calendar.]

Golden number s	Days to which the golden numbers are assigned in the old Calendar	Days to which the golden numbers are assigned in the new Calendar	Years of the Lord in which the aforesaid golden numbers were in use	Mean new moons in the aforesaid years
xix	3. Febr.	4. Febr.	550	2. Feb. H. 0 M. 35.

Golden numbers	Days to which the golden numbers are assigned in the old Calendar	Days to which the golden numbers are assigned in the new Calendar	Years of the Lord in which the aforesaid golden numbers were in use	Mean new moons in the aforesaid years
viiij	4. Febr.	5. Febr.	539	3. Feb. H. 20. M. 44.
xix	30. Iul.	31. Iul.	550	29. Iul. H. 4. M. 59.
xix	28. Aug.	29. Aug.	550	27. Aug. H. 17. M. 44.
xix	27. Sept.	28. Sept.	550	26. Sept. H. 6. M. 28.
xvj	1. Octob.	30. Sept.	547	29. Sept. H. 15. M. 18.
v	2. Octob.	1. Octob.	536	30. Sept. H. 11. M. 26.
xix	26. Octob.	27. Octob.	550	25. Oct. H. 19. M. 12.
xix	25. Nou.	26. Nou.	550	24. Nou. H. 7. M. 56.
xvj	29. Nou.	28. Nou.	547	27. Nou. H. 16. M. 46.
v	30. Nou.	29. Nou.	536	28. Nou. H. 12. M. 55.
xix	24. Decem.	25. Dec.	550	23. Dec. H. 20. M. 40.

From this little table it plainly appears that the golden number **19** of the old Calendar, in February, July, September, and November, shows new moons more conformable to the mean new moons than the same golden number of the new Calendar does; but that in the other months the same golden number in the new Calendar, together with the remaining golden numbers, exhibits new moons that differ less from the mean new moons than in the old Calendar. And so no one will justly find fault with the epacts in the Calendar, even though in twelve places they display golden numbers different from those in the old Calendar — since in

eight of those twelve places the golden numbers in the new Calendar show the new moons more correctly than in the old, as has been said.

17. For a fuller understanding of the embolisms as well, it has seemed good to append the following perpetual Table of the New Moons of the whole year, in which one may see at a single glance on what days of the months the new moons fall according to the Cycle, whatever epact is current: so that this table is, in a manner of speaking, the new Calendar reduced to a compendium, containing the beginnings of all the lunations according to the epacts, both in the common year and in the embolismic. Thus from this too the excellence of the Gregorian Calendar may appear — the Calendar in which, the golden numbers having been rejected, the epacts were put in their place; for by means of the epacts so small a table, embracing all the new moons in perpetuity, can be constructed, which cannot be achieved either by the golden numbers or by any other Cycle whose numbers do not fill every place of the Calendar. And since the year in which thirteen lunations are contained is embolismic, it plainly follows that these eleven epacts — xxix, xxviii, xxvii, xxvi, xxv, 25, xxiiii, xxiii, xxi, xx, xix — are embolismic, as we said above, since each of them contains 13 lunations in the following table. For the lunations of these epacts that begin in the month of January are the second lunation in the year; and those that begin in the month of December are the first of the following year — except epact xix, whose lunation beginning on 2 December is the last of the whole year. But when, epact xviii being current, the lunation beginning on 3 December is the last of the whole year (which indeed happens when golden number 19 is simultaneously in use), that year too is embolismic, as has been said. Finally, when epact * is current, the year is common, since it contains only 12 lunations, inasmuch as the lunation which begins on the Kalends of January is the first of the whole year, and not the second.

[Margin: The excellence of the new Calendar with the epacts.]

[Margin: In what way the embolismic epacts may be recognized from the perpetual Table of the New Moons.]

There follows the perpetual Table of the New Moons of the whole year.

Caput XVII (concluded)

PERPETUAL TABLE OF THE NEW MOONS of the whole year.

On what days of the months the new moons fall, whatever epact is current.

The table gives, for each epact (leftmost column, Epactæ) and each month of the year, the day of the month on which the new moon falls. A cell showing two numbers separated by a period (e.g. 1. 31) marks a month in which the new moon falls twice — on day 1 and on the later day. The rightmost column classifies the year: Cōis = *Communis* (common year), Embol. = *Embolismicus* (embolismic year, with thirteen lunations), Indiff. = *Indifferens* (indifferent). Alongside the lower epact rows (from xvii down to j) the frame carries the vertical side-label ANNI COMMVNES ("Common years").

The typographic distinction between Roman xxv and Arabic 25 in the epact column is as printed and is load-bearing (the doubled epact); their month rows differ. The epact-30 row is set with the asterisk sort *.

Epa ct	F												Year
	Ja n	e b	Ma r	Ap r	Ma y	Ju n	Jul	Aug	Se p	Oc t	No v	De c	
*	1. 31		1. 31	29	29	27	27	25	24	23	22	21	Cōis
xxi x	2	1	2	1. 30	30	28	28	26	25	24	23	22	Emb ol.
xxv iii	3	2	3	2	1. 31	29	29	27	26	25	24	23	Emb ol.
xxv ii	4	3	4	3	2	1. 30	30	28	27	26	25	24	Emb ol.
xxv i	5	4	5	4	3	2	1. 31	29	28	27	26	25	Emb ol.
xxv	6	5	6	5	4	3	2	1. 30	29	28	27	26	Emb ol.
25	6	4	6	4	4	2	2	30	28	28	26	26	Emb ol.
xxii ii	7	5	7	5	5	3	3	1. 31	29	29	27	27	Emb ol.
xxii i	8	6	8	6	6	4	4	2	1. 30	30	28	28	Emb ol.
xxii	9	7	9	7	7	5	5	3	2	1. 31	29	29	Emb ol.
xxi	10	8	10	8	8	6	6	4	3	2	1.	30	Emb

Epa ct	Ja n	F							Se p	Oc t	No v	De c	Year
		e b	Ma r	Ap r	Ma y	Ju n	Jul	Aug					
											30		ol.
xx	11	9	11	9	9	7	7	5	4	3	2	1.	Emb ol.
												31	
xix	12	1 0	12	10	10	8	8	6	5	4	3	2	Emb ol.
xvii i	13	1 1	13	11	11	9	9	7	6	5	4	3	Indi ff.
xvii	14	1 2	14	12	12	10	10	8	7	6	5	4	
xvi	15	1 3	15	13	13	11	11	9	8	7	6	5	
xv	16	1 4	16	14	14	12	12	10	9	8	7	6	
xiiii	17	1 5	17	15	15	13	13	11	10	9	8	7	
xiii	18	1 6	18	16	16	14	14	12	11	10	9	8	
xii	19	1 7	19	17	17	15	15	13	12	11	10	9	
xi	20	1 8	20	18	18	16	16	14	13	12	11	10	
x	21	1 9	21	19	19	17	17	15	14	13	12	11	
ix	22	2 0	22	20	20	18	18	16	15	14	13	12	
viii	23	2 1	23	21	21	19	19	17	16	15	14	13	
vii	24	2 2	24	22	22	20	20	18	17	16	15	14	
vi	25	2 3	25	23	23	21	21	19	18	17	16	15	
v	26	2	26	24	24	22	22	20	19	18	17	16	

Epa ct	Ja n	F e b	Ma r	Ap r	Ma y	Ju n	Jul	Aug	Se p	Oc t	No v	De c	Year
		4											
iiii	27	2	27	25	25	23	23	21	20	19	18	17	
		5											
iii	28	2	28	26	26	24	24	22	21	20	19	18	
		6											
ii	29	2	29	27	27	25	25	23	22	21	20	19	
		7											
j	30	2	30	28	28	26	26	14 [recte: 24]	23	22	21	20	
		8											

CAPUT XVIII.

What the fourteenth Moon is, and why the epacts are so arranged and adjusted in the Calendar that their new moons for the most part follow the mean and true conjunctions of the luminaries.

[Margin: A mistaken opinion of some, that Easter is not to be celebrated on the fifteenth Moon but afterward.]

Long ago, in the earlier sections, we established that Easter is to be celebrated after the fourteenth Moon [Luna xiiii] of the first month up to the twenty-first Moon — so that only a Sunday falling on the fifteenth, sixteenth, seventeenth, eighteenth, nineteenth, twentieth, or twenty-first Moon is fit and suitable for the celebration of Easter. We proved this in Chapter 1, both from the decrees of the Supreme Pontiffs and of the Councils, and from the various testimonies of distinguished writers and the perpetual usage of the Church. It is therefore astonishing that some of the more recent authors — who think themselves wiser and more discerning than those ancient Fathers and Councils — are not afraid to assert, so obstinately and against the continuous usage of the Church both Eastern and Western, that Easter must not be celebrated except after the fifteenth Moon, that is, after the full moon, even when it falls on a Sunday together with the fifteenth Moon. Their reason is that they suppose we then celebrate Easter together with the Jews. In this they are utterly deceived.

[Margin: How it was forbidden for the Christian Easter to be celebrated together with the Jews.]

For Christians were never forbidden to celebrate Easter on the fifteenth Moon, that is, at the mean full moon, even if the Jews are then performing the solemnity of their legal Passover. What was forbidden was only to celebrate Easter on the fourteenth Moon, when the Jews slaughter the lamb toward evening. Otherwise, if the fifteenth Moon — the mean full moon — fell on a Sunday, and one still had to wait for another Sunday, Easter would be celebrated on the twenty-second Moon, that is, in the fourth week of the lunar month. That conflicts with the rulings of the Councils and the Pontiffs, by which it was often laid down that Easter should be celebrated after the fourteenth Moon of the first month up to and including the twenty-first, as we showed fully in Chapter 1. In our own age we have more than once seen Easter celebrated, by the decree of the Council of Nicaea [Concilium Nicænum], on the 22nd of March — that is, on the fifteenth Moon, which the Cycle offered by golden number 16 — since the fourteenth Moon of the Cycle then necessarily fell on the 21st of March, before which day there can be no Paschal fourteenth Moon, as we showed in the same Chapter 1. Indeed, whenever the fourteenth Moon of the first month falls on a Saturday, Easter has been celebrated on the very next Sunday, that is, on the fifteenth Moon which the Cycle indicated. On this matter see what we discussed in Chapter 1, No. 7, where we cited 175 Easters that were celebrated on the fifteenth Moon from the Council of Nicaea down to this Gregorian correction.

[Margin: That the Church has frequently celebrated Easter on the fifteenth Moon.]

Now suppose someone should say that the fifteenth Moon derived from the golden-number Cycle in the old Calendar, in these times before the correction of the year, always followed the mean full moon by a full four days and more, because the new moons had advanced by so great an interval from their original seats toward the beginnings of the months; and that therefore Easter was not celebrated at that fifteenth Moon or at the mean full moon, but much later, even though it fell on the fifteenth Moon of the Cycle. If anyone, I say, should argue thus, the answer is that this happened by chance and (to speak with the philosophers) *per accidens*, because of that excessive anticipation of the new moons; whereas of itself, by its own nature, that Easter fell on the mean opposition — that is, if the new moons had then been restored to their proper places. But grant that Easter was never in our age celebrated at the mean full moon, but afterward, on account of that anticipation of the new moons: certainly near the times of the Council of Nicaea — as in the leap year A.D. 340, by the decree of that same Council — Easter was celebrated on the fifteenth Moon according to the Cycle on the 30th of March, since the golden number that year

was 18, placing the Paschal term, that is the fourteenth Moon, on the 29th of March. The Dominical letter after the intercalated day was E, assigned to the 30th of March; and the mean opposition finally occurred on the 29th of March, at about 9 hours after midday, and so was to be assigned to the following 30th day. The same thing happened in many other years, as is clear from the table of Chapter 1 — although sometimes Easter celebrated on the fifteenth Moon nearly anticipated the mean opposition, namely in the years 326, 330, 346, 350, 370, 441, 475, 495. This came about because the golden number was so distributed through the days of the Calendar at the time of the Council of Nicaea that the new moons were indicated too early, as I shall show below at No. 5.

2. Since, then, Easter must necessarily be celebrated on the Sunday that next follows the fourteenth Moon of the first month — and indeed on the fifteenth Moon itself, if that is then a Sunday — it must now be explained what that fourteenth Moon is, and how, according to the most ancient usage of the Church, it is to be sought in the Calendar, so that no error or dissension may arise in so great a solemnity. For there is no lack of people in our time who do not judge rightly on this matter.

[Margin: A mistaken opinion of some concerning the Paschal fourteenth Moon.]

Some suppose that the fourteenth Moon is the very day of the opposition of the Sun and Moon. But these men (as the saying goes) err by the whole heaven. For since Easter can be celebrated at the full moon, as the usage of the Church teaches, and the Decrees of the Fathers and the Councils, which we showed above; and since it was laid down by those same authorities that Easter should never be celebrated on the day of the fourteenth Moon but always after it — who is so blind as not to see (except those few who nonetheless want to be reckoned lynxes [Lyncei] in this business) that in God's Church the fourteenth Moon and the full moon are not the same thing? Read carefully what we wrote in Chapter 1, No. 7, where we cited many authors, both weighty and learned, ancient as well as recent, who plainly call the full moon the fifteenth Moon, not the fourteenth.

[Margin: Another mistaken opinion concerning the Paschal fourteenth Moon.]

Others, granting that Easter can be celebrated on the fifteenth Moon, that is, at the full moon, on account of the perpetual usage of the Church and the testimonies we brought forward in Chapter 1, too obstinately affirm that the fourteenth Moon is that day which next precedes the true opposition. But this is not true either, since the Church has never taken account of the true motions — nor indeed of the mean ones — but only of the Cycles, as we demonstrated fully

and copiously in Chapter 4. Indeed, if this view were true, it would be all over with every Cycle, since none could be found (as we shall say later) that can be so arranged in the Calendar that its fourteenth Moon always anticipates the true opposition, or even the mean one, by one day.

[Margin: What the Paschal fourteenth Moon is, according to the usage of the Church.]

3. The fourteenth Moon, therefore, is taken by the Church as the fourteenth day of the Paschal lunation, counting it inclusively from the new moon [Neomenia], that is, from the beginning of the Paschal lunar month — from that day to which is prefixed the number of the nineteen-year Cycle [Cyclus decennouenalis] which, in this scheme, indicates the new moons in the Calendar — whether that day agrees with the true or the mean conjunction of the Sun and Moon, or differs from it. This is confirmed by all who have written on the celebration of the movable feasts, and most clearly from the ancient table of Easter and of the other movable feasts, which always

the Church used before this correction of the year. In that table each golden number is prefixed to the day of March or April which is the fourteenth, counted inclusively, from the new moon that is shown in the Calendar by that same golden number, and after which the next arriving Sunday presents the most holy Easter. And this was always observed not only in the Western Church but also in the Eastern — which can be proved from the fact that never, before this restoration of the Calendar, did any dissension or variation in the celebration of Easter arise between the Easterns and the Westerns; and this could by no means have happened unless the fourteenth Moon had been taken in the same way, that is, reckoned inclusively from the new moon of the Cycle.

4. Although the Church, in seeking the new moon and the fourteenth Moon from it, considers neither the true motions nor the mean ones, but measures them solely according to the order of the Cycle, it must nevertheless be granted that the mean oppositions found from the astronomical tables are most useful for weighing and judging which Cycle, out of several, is to be chosen and described in the Calendar for tracking down the Paschal fourteenth Moons.

[Margin: That tables of the Moon's mean motion are useful for testing any proposed Cycle.]

[Margin: Which Cycle out of all is to be chosen.]

For that one is to be adopted out of all whose numbers, with the equation applied at their proper times, always so lay out in the Calendar the new moons — and from these the fourteenth Moons of the first month, for the right celebration of the most holy Easter — that no Paschal fourteenth Moon, reckoned inclusively from the new moon, ever runs ahead of the mean opposition by two or more days, but either by one only, or else falls on the mean full moon itself, or at least does not follow it by much.

[Margin: That the Cycle of Epacts is so arranged that the Paschal fourteenth Moons do not precede the mean oppositions by more than one day; and why.]

Yet the Church does not greatly trouble itself to search out the Paschal fourteenth Moon with such accuracy and diligence; for it is enough for the Church that everyone everywhere observe the day of the fourteenth Moon reckoned inclusively from the new moon of the Cycle, even if it sometimes anticipates or follows the mean opposition by more than one day. In our Cycle of Epacts, at any rate, we have striven with the greatest possible care and diligence to have it indicate, through the days of the Calendar, new moons that nearly follow the true and mean conjunctions of the luminaries by just so great an interval as suffices for the Paschal fourteenth Moons either to anticipate the mean oppositions by one day only, or to fall on them exactly, or finally to occur not long after them. Nor was this done by us rashly or by chance, but of set purpose and with great deliberation.

For if the first day of the lunar month according to the Cycle were the one on which the astronomical tables place the true new moon (what the Computists call the *Accension* of the Moon), and not the one that follows the astronomical new moon by about a day, more or less, it would often happen that we should celebrate holy Easter not only on the fourteenth Moon — that is, one day before the full moon, together with the Jews and the Quartodeciman [Quartadecimani] heretics, which would be absurd — but sometimes, what would be still more absurd, even before such a fourteenth Moon. This can be made plain as follows.

Let the mean new moon occur, for example, in some year at midday of the 8th day of March, where the Cycle sets the first Paschal new moon. On this supposition, the mean full moon will occur on the 23rd of March about sunrise — that is, 14 days, 18 hours, 22 minutes, 2 seconds after the mean conjunction; for so many days, hours, and fractions of hours necessarily intervene between the mean conjunction and the opposition, as we wrote in Chapter 8, No. 2. Since, then, the fourteenth Moon of that new moon falls by the Cycle on the 21st of March, Easter will then be celebrated on the 22nd of March, if that be a Sunday —

that is, a whole day before the mean opposition. Nearly the same absurdity would arise if the mean new moon, which occurs 12 hours before midday of the same 8th of March — that is, at the very midnight of the preceding day — were taken as the first day of the Paschal Moon. For its full moon will fall on the 22nd of March, at sunset, and so should rather be assigned to the following 23rd day than to the 22nd. Hence, if the 22nd were then a Sunday, Easter would again be celebrated about the mean full moon.

[Margin: If the new moon of the Cycle did not follow the conjunction that occurs in the heavens, Easter would often be celebrated before the full moon.]

Nor will this drawback be any better avoided if the day of the true new moon be called the first day of the Moon according to the Cycle. For since it is established by astronomical calculation that the true full moon can be $15\frac{1}{2}$ days and more from the true new moon — (let the example be the true new moon in the month of July of the past year 1600, in which we were writing this, which, according to the Ephemerides of Giovanni Antonio Magini [Magini], fell on the 10th of July, at $1\frac{1}{2}$ hours after midday; while the true full moon fell on the 25th, at 14 hours after midday, where you plainly see that the interval between the new moon and the full moon comprises $15\frac{1}{2}$ days and one hour besides) — who does not see that, if the true new moon then fell at midday of the 18th of March, the true full moon would occur on the 23rd at 14 hours after midday, and consequently, if the Sunday then fell on the 22nd of March, Easter would have to be celebrated before the true full moon?

By another example, which I shall add, the same matter will be more fully illustrated. In the year 1588 the true new moon occurred on the 26th of March, at 14 hours 49 minutes after midday — that is, on the 27th, about 9 hours before midday; while the true full moon occurred on the 11th of April, at 1 hour after midday. If, then, the epact xij of that year had been placed against the 27th of March (as some contend, considering the matter less accurately, so that the first day of the Paschal new moon found from the Cycle would not diverge from the day of the true new moon), the fourteenth Moon would have fallen on the 9th of April; and on the following 10th, since it was a Sunday, Easter would by the ecclesiastical decrees have been celebrated — that is, a whole day before the true full moon, which would be absurd. By skillful and prudent counsel, therefore, epact ij was assigned by us not to the 27th of March but to the 29th, even though the first day of that lunation follows the 27th, the day of the true new moon, by nearly two days — so that, precisely, its fourteenth day may not much anticipate the true full moon.

[Margin: Why the epacts in the Calendar were not advanced upward by one day, so that they would indicate the new moons earlier than they now do.]

But if those who think that by our epacts the new moons are put off in the Calendar more than is right — that is, indicated later than is proper — should object that epact ij ought to have been prefixed to the 28th of March, and not to the 29th, so that its new moon would be distant from the true one not by two days but by one only: I answer that this could by no reasoning have been done. For if that epact were to migrate from the 29th of March to the 28th, all the other epacts too would have to be advanced upward by one day, since they cannot be described in the Calendar in any other order than that in which we have described them, if the lunations are to be constituted alternately of 30 and 29 days, as the rule requires. And this advancement, if it were instituted — besides the fact that the Paschal fourteenth Moon would then fall on the 10th of April, and consequently would anticipate the true full moon by a greater interval than one day — would cause the new moons of many epacts to run ahead of the true conjunctions of the luminaries by a whole day, as clearly appears in the following table drawn from the Ephemerides of Giovanni Antonio Magini.

There follows the table.

TABLE

Drawn from the Ephemerides of Giovanni Antonio Magini [Magini]

This table sets side by side, for each entry: the year of the Lord, the month, the true new moon by Magini's Ephemerides (in days, hours, and minutes after midday), the epact current in that year, and — in the last column — the new moon that the epacts would indicate if they were advanced one day upward. The two panels below are read left panel first, then right panel; the years run continuously from one panel to the next.

The column headed **Nouilunia vera ex Ephemeridibus Magini** carries three sub-columns, **D.** (days), **H.** (hours), **M.** (minutes); these are given as three numeric columns below. The last column, **Nouilunia ex Epactis per vnum diem sursum promotis** ("New moons from the epacts advanced one day upward"), is here abbreviated **Promoted**. Epacts are transcribed exactly as printed (lowercase Roman, with i- or j-terminal sorts preserved).

Left panel (p. 348):

Anni Domini	Menses	M			Epactæ	Promoted
		D.	H.	.		
1582	Deccm.	2 4	1 5	5 5	xxvi	24
1583	Ianuar.	2 3	8	0	vii	23
1583	Februar.	2 1	2 1	1 8	vii	21
1583	Mart.	2 3	8	1 6	vii	23
1583	Apr.	2 1	1 7	1 5	vii	21
1583	Iun.	1 9	6	2 4	vii	19
1583	Octob.	1 5	4	5 3	vii	15
1583	Deccm.	1 3	1 7	1 5	vii	13
1584	Ianuar.	1 2	1 2	8	xviii	12
1584	Februar.	1 1	5	3 1	xviii	10
1584	Apri.	1 0	8	2 0	xviii	10
1585	Apri.	2 9	6	3 3	xxix	29
1586	Apri.	1 8	1 2	1 3	x	18
1586	Iun.	1 6	1 4	3 1	x	16
1586	Aug.	1 4	9	9	x	14
1587	Apri.	7	1 2	5 6	xxi	7
1587	Mai.	7	5	2	xxi	7

Anni Domini	Menses	D.	H.	M .	Epactæ	Promoted
				4		
1587	Iun.	5	2	2	xxi	5
			0	9		
1587	Iul.	5	1	1	xxi	5
			0			
1587	Aug.	3	2	5	xxi	3
			1	5		
1587	Septem.	2	8	3	xxi	2
				1		
1587	Octob.	1	1	2	xxi	1
			8	3		
1587	Octob.	3	4	0	xxi	31
		1				
1587	Nouem.	2	1	3	xxi	29
		9	3	8		
1589	Octob.	9	3	2	xiii	9
				6		
1589	Decem.	7	6	3	xiii	7
				3		
1590	Februar.	4	4	1	xxiiii	4
				1		
1590	Septem.	2	5	3	xxiiii	28
		8		6		
1590	Nouem.	2	1	2	xxiiii	26
		6	5	8		
1590	Decem.	2	6	2	xxiiii	26
		6		0		
1591	Febru.	2	6	1	v	23
		3		5		
1591	Decem.	1	1	4	v	15
		5	1	0		

Right panel (p. 348):

Anni Domini	Menses	D.	H.	M .	Epactæ	Promoted
1592	Ian.	1 4	4	3 4	xvi	14
1592	Feb.	1 2	1 9	1 1	xvi	12
1594	Apr.	2 0	4	3	viii	20
1595	Apr.	9	7	4 4	xix	9
1595	Iun.	7	1 2	2 1	xix	7
1595	Aug.	5	8	3 6	xix	5
1596	Febr.	2 7	1 5	0	j	27
1596	Iun.	2 5	6	4 9	j	25
1596	Aug.	2 3	7	5	j	23
1596	Octob.	2 1	3	2 6	j	21
1597	Iun.	1 4	8	4 0	xii	14
1597	Aug.	1 2	1 4	1 9	xii	12
1567	Septem.	1 1	4	0	xii	11
1597	Octob.	1 0	1 6	4 6	xii	10
1597	Nouem.	9	4	2 5	xii	9
1597	Decem.	8	1 5	7	xii	8
1598	Febr.	5	1	1	xxiii	5

Anni Domini	Menses	D.	H.	M .	Epactæ	Promoted
			1	9		
1598	Apr.	5	9	1	xxiii	5
				0		
1598	Iun.	3	1	2	xxiii	3
			0	8		
1598	Aug.	1	1	5	xxiii	1
			5	5		
1598	Aug.	3	7	3	xxiii	31
		1		9		
1598	Septem.	2	2	3	xxiii	29
		9	3	3		
1598	Octob.	2	1	3	xxiii	29
		9	4	9		
1598	Nouem.	2	4	2	xxiii	27
		8		9		
1598	Decem.	2	1	3	xxiii	27
		7	6	9		
1599	Ian.	2	3	2	iiii	26
		6		7		
1599	Febr.	2	1	2	iiii	24
		4	3	4		
1599	Apr.	2	8	1	iiii	24
		4		4		
1599	Iun.	2	5	8	iiii	22
		2				
1599	Aug.	2	8	1	iiii	20
		0		5		
1599	Octob.	1	1	5	iiii	18
		8	7	9		
1599	Nouem.	1	1	1	iiii	17
		7	1	5		

THE REMAINDER OF THE TABLE

Drawn from the Ephemerides of Giovanni Antonio Magini [Magini]

The continuation of the same table, in the same five columns. The years run on from the preceding leaf.

Left panel (p. 349):

Anni Domini	Menses	D.	H.	M .	Epactæ	Promoted
1599	Deccm.	1 7	3	1 6	iiij	16
1600	Ianuar.	1 5	1 7	1 8	xv	15
1600	Februar.	1 4	5	9	xv	13
1600	Deccm.	5	6	3 3	xv	5
1601	Mart.	4	5	3 5	xxvi	4
1602	Februar.	2 1	1 3	3 0	vii	21
1602	Mart.	2 3	4	1 9	vii	23
1602	Apr.	2 1	6	9	vii	21
1602	Iun.	1 9	9	8	vii	19
1603	Februar.	1 0	1 4	4 3	xviii	10
1603	Mart.	1 2	8	5 1	xviii	12
1603	Apri.	1 1	0	5 2	xviii	10
1603	Mai.	1 0	1 3	5 6	xviiij	10

Anni Domini	Menses	M			Epactæ	Promoted
		D.	H.	.		
1603	Iun.	9	0	4	xviiij	8
				5		
1603	Iul.	8	9	3	xviiij	8
1603	Aug.	6	1	4	xviiij	6
			6	4		
1603	Octob.	4	9	1	xviiij	4
1603	Decem.	2	7	1	xviiij	2
				4		
1605	Iun.	1	3	1	x	16
		6		0		
1606	Iun.	5	4	1	xxi	5
				8		
1606	Aug.	3	1	3	xxi	3
			0	0		
1606	Octob.	1	1	2	xxi	1
			4	5		
1606	Nouem.	2	1	7	xxi	29
		9	4			
1607	Aug.	2	3	7	ij	22
		2				
1607	Octob.	2	1	6	ij	20
		0	1			
1607	Decem.	1	1	9	ij	18
		8	5			
1608	Febru.	1	1	5	xiii	15
		5	2	1		
1609	Febr.	4	3	4	xxiiii	4
				2		
1610	Febr.	2	3	3	v	23
		3		0		
1611	Febr.	1	9	2	xvi	12
		2				
1611	Apri.	1	1	2	xvi	12

Anni Domini	Menses	M			Epactæ	Promoted
		D.	H.	.		
		2	4	9		
1611	Iun.	1	9	1	xvi	10
		0		4		

Right panel (p. 349):

Anni Domini	Menses	M			Epactæ	Promoted
		D.	H.	.		
1615	Feb.	2	6	9	j	27
		7				
1615	Apr.	2	9	1	j	27
		7		4		
1615	Iun.	2	1	7	j	25
		5	5			
1615	Iul.	2	6	1	j	25
		5		7		
1615	Aug.	2	2	1	j	23
		3	1	4		
1615	Septem.	2	1	3	j	22
		2	1	2		
1615	Octob.	2	0	4	j	21
		2		9		
1615	Nouem.	2	1	5	j	20
		0	2	2		
1615	Decem.	1	2	4	j	19
		9	3	7		
1616	Ian.	1	9	5	xii	18
		8		6		
1616	Febr.	1	1	5	xii	16
		6	9	7		
1616	Octob.	1	7	0	xii	10
		0				
1616	Decem.	8	1	5	xii	8
			2	0		

Anni Domini	Menses	D.	H.	M .	Epactæ	Promoted
1617	Febr.	5	1	1	xxiii	5
			2	0		
1617	Apr.	5	7	2	xxiii	5
1617	Septem.	2	7	4	xxiii	29
		9		5		
1617	Nouem.	2	1	8	xxiii	27
		7	9			
1617	Decem.	2	1	2	xxiii	27
		7	1	7		
1618	Febr.	2	1	3	iiii	24
		4	6			
1618	Apr.	2	8	1	iiii	24
		4		0		
1618	Decem.	1	1	2	iiii	16
		6	4	2		
1619	Ian.	1	8	2	xv	15
		5		7		
1619	Febr.	1	0	3	xv	13
		4		4		
1619	Mart.	1	1	5	xv	15
		5	3	0		
1619	Apr.	1	0	3	xv	13
		4		0		
1619	Mai.	1	9	0	xv	13
		3				
1619	Iun.	1	1	2	xv	11
		1	6	2		
1619	Aug.	9	7	2	xv	9
				4		
1619	Octob.	7	5	1	xv	7
				4		
1619	Decem.	5	1	5	xv	5
			3	6		

Anni Domini	Menses	D.	H.	M .	Epactæ	Promoted
1620	Ian.	4	8	5 7	xxvi	4
1620	Febr.	3	4	1	xxvi	3

[Caput XVIII, continued]

[Margin: Explanation of the preceding table.]

In the first column of this table are set out the years of the Lord; in the second, the months; in the third, the days, hours, and minutes after midday at which the Ephemerides of Giovanni Antonio Magini [Magini] give the true new moons; in the fourth, the epacts current in those years; and in the fifth, finally, the new moons as they would be shown by those epacts if they were advanced one day. Here it is plainly established that these latter new moons are indicated by the epacts so advanced *earlier* than the former actually occur in the heavens. And indeed in certain years — for instance in November 1598, in December 1599, in April 1603, in June 1603, in October 1615, in February 1619, and in the month of June 1619 — this anticipation amounts to more than a whole day, which would be quite absurd. We have, moreover, passed over those true new moons (of which there is no small number) that occur at midday itself, or one or two hours after midday, on the same days on which they would be shown by the advanced epacts; and we have noted down only those that follow the epacts' new moons by several hours. And yet, as you see, within a span of less than 40 years there would be **128** new moons of the epacts — if these were advanced by one day — that fall earlier than the true conjunctions of the luminaries occur in the heavens. This would be contrary to the practice of all the nations among whom the lunar cycle has been in use. The epacts, therefore, are not to be advanced one day upward; and accordingly the epact ij is rightly assigned to the 29th of March, and not to the 28th.

5. The same absurdities would follow if someone, leaving the epacts in the Calendar arranged just as we have described them, in their correct order, were nonetheless to set up the equation table differently — namely, by prefixing to the year 1582, after the correction, not the capital letter **D** but the letter **E**. For then, as in the expanded table, the golden number 12 of the year 1588 would answer to epact iij on the line of epacts to which the capital letter **E** is assigned — whereas in fact that line answers to epact iij. The same absurdities, I say, would follow, because then the new moons

would be shown by the epacts one day earlier still, exactly as if the epacts had been advanced by one day, while the equation table remained untouched.

[Margin: That in the equation table the capital letter **D** is rightly assigned to the year 1582 after the correction, and not the capital letter **E**.]

Rightly, therefore, did we prefix in the equation table the capital letter **D** to the year 1582 after the removal of the ten days, and not the capital letter **E**, lest the new moons be indicated by the epacts in the Calendar earlier than they ought to be. In the same way we shall confirm that the other letters have been suitably prefixed to other years in the equation table — so that, if the equation were set up otherwise, the true new moons should not coincide with them, nor precede them (both of which are absurd), but rather (as is more in keeping with the practice of the Church) should follow them, so that the fourteenth Paschal moons may always, so far as can be done, anticipate the mean full moons by only a single day.

[Margin: That Easter, around the times of the Council of Nicæa, frequently fell as it were on the fourteenth Moon, because the new moons were shown too early by the golden number.]

Again, that it is not expedient for the new moons of the cycle to coincide with the mean or the true conjunctions, but rather more in accord with ecclesiastical usage that they should follow them, the golden-number cycle once inscribed in the Calendar can plainly teach us. For since, around the times of the Council of Nicæa, this cycle indicated the new moons on very nearly the same days on which they occurred in the heavens, the result was that most frequently Easter then fell on almost the fourteenth Moon — that is, it was celebrated before the mean opposition, contrary to the decrees of that same Council. I said "almost," because the day of Easter reached to within some hours of the mean opposition, so that it cannot be said absolutely that it was celebrated on the fourteenth Moon itself. This, indeed, can be avoided in no cycle whatever, as we shall show more fully in chapter 22, Number 4; but only in this respect does that cycle of the Council of Nicæa seem open to censure — that it too frequently set the day of Easter to be celebrated in this way, on account of that anticipation of the new moons. For the more rarely this error is committed (if it is to be called an error, since it cannot be avoided), the more perfect the arrangement of the cycle in the Calendar is to be judged. And this our cycle of epacts does excellently, as will be plainly established from chapter 22, where we have computed Easter for very many years. But see the following little table of eight years, in which, around the

times of the Council of Nicæa, Easter was celebrated before the mean and lawful time — especially in the years 326, 346, 475, and 496, in which the mean full moon fell after sunset on the day of Easter.

Anni Domini	Aurei Numeri	Literæ Dominicales	Pascha	[Opp.] D.	H	M
326	4	B	3 Apr.	3	1	5
					3	4
330	8	D	19 Apr.	19	2	3
						7
346	5	E	23 Mar.	23	1	1
					5	6
350	9	G	8 Apr.	8	3	5
						8
370	10	C	28 Mar.	28	5	1
						9
441	5	E	23 Mar.	23	1	5
						8
475	1	E	6 Apr.	6	1	4
						1
495	2	A	26 Mar.	26	1	2
					2	5

The five columns are: the year of the Lord; the golden number; the Dominical letter; the day of Easter; and the mean Paschal oppositions (in days, hours, and minutes).

[Margin: Why, in the celebration of Easter, even after the Council of Nicæa, there were so many disagreements between the Eastern and the Western Church.]

In the first column are marked the years in which Easter was celebrated before the mean full moon, or at least not after it, but on those days whose full moons fall some hours after midday; in the second column are contained the golden numbers current in those years; in the third, the Dominical letters; in the fourth, the days of Easter; and in the fifth, finally, the mean Paschal oppositions. Here you see that this error — that is, this anticipation of Easter — was committed in 8 of a span of 170 years. So it is no wonder that there were still so many discords in the celebration of Easter, after the Council of Nicæa, between the Eastern and the Western Church, right down to the times of the Emperor Justinian, when the

golden-number cycle inscribed in the Calendar by the Abbot Dionysius [Dionysius Exiguus] more correctly [showed] the new—

Caput XVIII (continued)

the new moons, according to the practice of the Church, and the fourteenth Moons for Easter — but it displayed them later than they actually occurred in the heavens at the time of the Council of Nicæa.

6. There is a further point. Unless the new moons of the Epacts followed the conjunctions of the luminaries in the way that the Epacts (with the equation-table applied) display them in the Calendar, glaring and intolerable errors would very often arise in the celebration of Easter. The clearest possible example of this was the year 1598, which some people bring up to show that the Epacts do not present the legitimate fourteenth Moons for Easter — a matter on which they are remarkably mistaken.

[Margin: Many errors would arise in Easter if the Epact were to indicate the new moons earlier than the prescription of the new Calendar indicates them, especially in the year 1598.]

For suppose that, following the opinion of those who think that the new moons are indicated by the Epacts in the new Calendar later than the facts warrant, the individual Epacts were each moved up one day; or (what comes to the same thing) suppose the equation-table were set up so that in place of the line of the capital letter D, the line of the capital letter E were ordered to be taken in the expanded table. Then the Paschal new moon of that year, 1598, would have fallen on 5 April, where Epact 24 was then placed — if that promotion of the Epacts were carried out — or where Epact 24 stands, which would have indicated the new moons for that same year if the equation-table were constructed otherwise, so that the year 1582 after the correction had the capital letter E prefixed to it, and not the capital letter D. For the preceding new moon, which would then have fallen on 7 March, would not have been the Paschal one, since it falls outside the Paschal limits, as is clear from what we wrote in Chapter 1. On this supposition, Easter would have been celebrated on 19 April — that is, on the first Sunday after the fourteenth Moon, which would then have fallen on the 18th. Since, then, in that year the mean opposition occurred on 20 April at 9 hours 20 minutes after noon, but the true full moon on the 20th at 22 hours 39 minutes after noon (as Giovanni Antonio Magini's [Magini] *Ephemerides* would have it), the solemnity of Easter would have preceded the full moon — both the true and the mean — by

nearly two days. And that is contrary to the sacred Canons and to the Councils. The same can be shown to happen in various other years as well.

Now, to prevent such foul and shameful errors from being admitted in a matter of such solemnity, the Epacts have been arranged in the Calendar by the soundest counsel, and their equation set up in such a way, that the Epact for the year 1598 is 23, placed against 8 March. For on this arrangement the Paschal new moon of that year falls on 8 March, and its fourteenth day on the 21st; and Easter therefore had to be celebrated on the following day, the 22nd, which was a Sunday — the fifteenth Moon, that is, which fell on the mean opposition, since that opposition occurred on the 21st at 20 hours 36 minutes after noon, that is, on the 22nd about four hours before noon. Nor is it any objection to the correct celebration of Easter that year that the true full moon then occurred on the 22nd at 9 hours after noon; for in this matter the Church subordinates the true motions to the mean, as we showed in Chapter 4. Besides, it is enough that this Easter fell in a way upon the true full moon, since the 22nd, on which Easter was celebrated, lasted (according to the astronomers) until the noon of the following day, the 23rd.

[Margin: That some people wrongly judge that the Easter of the year 1598 ought to have been thrown back from 22 March to the 29th.]

But I am utterly astonished that there have not been wanting people who — seeing that the March new moon was the Paschal one that year, and not the April new moon (for the latter, by the mean motion, occurred on 5 April at about 15 hours after noon, and the mean opposition on 20 April at 9 hours after noon, both outside the Paschal limits; whereas the former occurred on 7 March at 20 hours 13 minutes after noon, and its mean opposition on the 21st at 20 hours 36 minutes after noon, which falls within the limits) — nevertheless claimed that Easter that year ought to have been thrown back to 29 March on account of that true opposition. For if that March new moon is the Paschal one, as it truly is (even on the testimony of the very detractors and adversaries — a thing which the Epact 23 of that year displays on 8 March, with its fourteenth day on the 21st), then the Church, if it meant to stand by the decrees of the Councils and the Fathers and by long-established custom, could not but celebrate Easter on the 22nd, since that was the Sunday next following the fourteenth Moon which the Cycle displays. For we have never read or heard that the Church ever postponed Easter beyond the fifteenth Moon of the Cycle (when that Moon falls on a Sunday) into another week — namely the fourth — and so onto the twenty-second Moon, since that is altogether repugnant to the ecclesiastical decrees. Nor, to defend

themselves, can they say that the Church ought to have thrown that new moon back to 9 March. For on that reckoning its fourteenth day would have fallen on 22 March, that is, on a Sunday, and Easter, by the decrees of the Fathers, would accordingly have been transferred to the following Sunday, the 29th. And they cannot, I say, argue in that way, because in that case either Epact 24, along with all the others, would have to be rolled down by one day, or (what is the same) Epact 22 would have to be taken in place of Epact 24, and therefore in the equation-table the letter C, capital, would have to be prefixed to the year 1582. And that is absurd, since on this reckoning the new moons of the Cycle would follow the celestial conjunctions too late — whereas to most people, and indeed to some even of our own adversaries, they appear to be shown by the Epacts, as arranged in the new Calendar, later than they should be. What, then, would they say if they were postponed by a full day still further?

[Margin: New moons placed too late cause Easter sometimes to be celebrated in the last month.]

There is this further point: if the new moons were postponed still more, Easter would not seldom be celebrated in the last, that is the twelfth, month. For it could then happen that some mean full moon fell on the very day of the equinox — that is, on 21 March — or preceded it, and that therefore that lunation belonged to the last month and not to the first (since the full moon of the first month must follow the day of the equinox: for the fourteenth Moon of that same first month, which precedes the full moon by one day, must never precede the day of the equinox, as we taught in Chapter 1). Yet a Cycle postponed more than is right would present it as the Paschal lunation — namely when its new moon fell on 8 March, and so its fourteenth day on the 21st, on the equinox itself. And this arises solely from the postposition of the new moons. For it follows from this that a mean new moon, anticipating the Cycle's Paschal new moon by two days or more, can have its full moon on the very day of the equinox, or before it, and must therefore be assigned to the last month, even though the Cycle ascribes that new moon to the first month. It is settled, then, that Easter in the year 1598 was, according to the practice of the Church, rightly celebrated on 22 March.

7. Since this is so, who would fail to understand that the Epacts are indeed properly arranged in the new Calendar? And who could with any justice presume to accuse us — except one utterly ignorant of ecclesiastical custom and of the use of the Cycles — because we placed the new moons that are to be sought by the Epacts *after* the new moons found by the astronomical tables? We did so precisely to avoid falling so often into the error I mentioned — that is, so as not to

celebrate Easter so frequently before the roughly mean opposition, as used to happen at the time of the Council of Nicæa.

[Margin: The arrangement of the Epacts in the Calendar cannot rightly be criticized.]

And this holds all the more since even so we could not entirely escape our own Cycle of Epacts occasionally offering Easter for celebration before the roughly mean opposition —

[Margin: Rarely in the new Calendar is Easter celebrated before the mean opposition; so much so that it almost does not reach it at all.]

though this happens very rarely indeed. As will be clear from Chapter 22, in the 908 years after the correction-year 1582 it happens only once, namely in the year 2133; and at most, in the span of 3418 years, up to the year 5000, fifteen times — whereas (as we said at Num. 5) near the times of the Council of

Nicæa this happened eight times in 170 years — and even so the many new moons shown by the same Cycle in the Calendar agree with the celestial new moons: namely all those which above, at Num. 4, we said would fall before the true conjunctions, if the individual Epacts were each moved up one day toward the beginnings of the months.

I said that Easter is *sometimes* — though rarely — celebrated before the roughly mean opposition, because if we wish to speak simply and without qualification, Easter does not then anticipate the mean opposition entirely, in such a way as not to reach it at all in some measure; for on the very feast of Easter the mean opposition nearly falls, as will be clear from the table in Chapter 22.

[Margin: No Cycle can avoid every inconvenience.]

Certainly, if anyone wishes to be so severe a judge of the Epacts, he ought to reckon with himself that no Cycle described in a Calendar can avoid every inconvenience — so that, that is, its new moons should neither disagree with the celestial new moons, nor should the oppositions, true and mean, of its fifteenth Moon ever occasionally come before them. Witness the Cycle of the golden number, approved by the Council of Nicæa: for while, around the time of that Council, it displayed the new moons on nearly the same days on which they occurred in the heavens, its Paschal fourteenth Moon often preceded the mean opposition by two days, and on that account Easter was not seldom celebrated before the roughly mean opposition, as we said a little earlier. Witness too our own Cycle of Epacts: for while our adversaries strive to place it in the Calendar in

such a way that its individual numbers are each moved up one day, so that they may not indicate the new moons too late, this forces many new moons to run ahead of the celestial new moons, as was said at Num. 4. And witness, finally, this same Cycle of Epacts of ours as described in the new Calendar: while it aims to guard against its Paschal fourteenth Moons preceding the mean oppositions by two days, it generally indicates the new moons as coming *after* the celestial conjunctions; yet not even with this precaution applied in the postposition of the new moons can it entirely escape its fourteenth Moons occasionally anticipating the mean full moons more than is right, and thus forcing Easter to be celebrated a little before the mean opposition. And if anyone should judge that the new moons ought on that account to be postponed still more, so that the fourteenth Moons might never be presented too far in advance of the mean oppositions, he will fall into greater inconveniences. For, first, the new moons of the Cycle would then stand too far from the celestial new moons, and would be shown in the Calendar later than is right. And then Easter would not seldom be celebrated in the last, or twelfth, month, and not in the first, as was explained at the end of Num. 4.

[Margin: The Epacts of the new Calendar hold to a middle course in the anticipation and postposition of the new moons.]

You see, then, how excellently our Epacts have been handled in the new Calendar, seeing that it has been demonstrated that they hold, as it were, a middle road between the two extremes: so that their new moons neither anticipate the celestial new moons too much, nor follow them too far, but proceed at a certain middle pace. What could be devised more excellent than this in the whole business?

[Margin: The Epacts could not be better placed than has been done in the new Calendar.]

Indeed I have always been of this opinion, and I hold it still: that the Epacts cannot be arranged and described in the Calendar otherwise, nor their equation set up otherwise, than has been done in the Gregorian Calendar — unless we are willing to run into errors all but countless and intolerable, and to keep the most sacred day of Easter, most frequently, contrary to the Canon of the Council of Nicæa and the decrees of the Fathers. And there is no one who does not see that everyone finds this expedient. Nor should it trouble us that occasionally, as we said, the new Calendar presents fourteenth Moons somewhat earlier, before the mean oppositions, than the whole reckoning would give; because in our Cycle this error, which can in no way be avoided, is both extremely rare (if it be

compared with the errors of the other Cycles, which are very frequent) and is often corrected by the Dominical letter.

[Margin: The error of the fourteenth Moon, by which it anticipates the mean opposition more than is right, is often corrected by the Dominical letter.]

For it happens that Easter is not always in that case celebrated before the mean opposition, because the Sunday does not immediately follow that fourteenth Moon, but falls on the mean opposition, or occurs after it. By this means it comes about that Easter is then celebrated either on the mean opposition itself, or after it, even though the fourteenth Moon anticipates the mean opposition more than is right — this on account of the imperfect nature of the Cycle, which is common to all Cycles, and in ours indeed less imperfect than in the rest.

8. There are many reasons why no Cycle can respond exactly to the celestial motions, but always brings some inconveniences with it.

[Margin: Why no Cycle can fully correspond to the celestial motions.]

First, because in the lunations of the Cycle, which are nearly always constituted alternately of 30 and 29 days, several fractions are here neglected, since one mean lunation does not contain a full 30 or 29 days, but 29 days 12 hours 44 minutes 3 seconds 11 thirds.

[Margin: Why the lunations in a leap year, after the intercalary day, are slower than they ought to be.]

Second, because since in the lunations of the Cycle no account is taken of the intercalary days in leap years, it comes about that sometimes a lunation begun in February, which ought to complete 30 days, is made to be of 31 days; and the lunations of the whole leap year — the first two months excepted — for the most part begin in the Calendar later than is right, on account of that intercalary day, which is not entered in the Calendar. Third, because, on account of the equation of both the solar and the lunar year, one must in certain years pass from one line of the expanded Epact-table to another, whether lower or higher (as is evident from the equation-table of Chapters 11 and 12; and this must also be learned from the Cycle of the golden number, since it too, for the same reason, must now be moved up, now down), it comes about that the magnitudes of the lunations are considerably altered and disturbed. For — to pass over other inconveniences — when a lower Epact, smaller by one unit, has to be taken, a lunation of 30 days will contain 31; and when a higher one, the same lunation will be made to be of 29 days. Fourth, because the mean conjunction of the luminaries, to which the

Cycle ought rather to conform than to the true conjunction, can precede and follow the true conjunction by several hours; so that it should be no wonder if the new moons and full moons of the Cycle diverge from the true conjunctions and oppositions. This variation is increased by the difference and dissimilarity of the meridians, on account of which the same conjunction which at Rome, say, occurs at noon itself, must for more easterly peoples fall several hours after noon, and for the more westerly, before noon.

9. That the new moons found from the Cycle ought rather to *follow* the conjunctions of the Sun and Moon that occur in the heavens, than to accompany them, we can also confirm by the authority of the weightiest writers.

[Margin: When, according to Bede, the Moon should be called the first.]

For the Venerable Bede [Bede], a man most experienced in this matter, in his book *On the Reckoning of Time* [*De ratione temporum*], Chapter 41, asserts that the Moon is not to be called "first" on the day on which it is conjoined with the Sun, but on the following day — even though the conjunction occurs 23 hours before sunset, at which (in his reckoning) the day begins. You see, then, that the Moon can be called "first" according to the Cycle — in Bede's view, a most careful writer on the correct celebration of Easter — even though the Sun has been conjoined with the Moon a full day, and more, earlier.

[Margin: When, according to Campanus, the Moon should be called the first.]

Campanus [Campanus] enjoins the same in his *Greater Computus* [*Computus maior*], Chapter 28, in these words: "The Moon ought to be called first, not on the very day of its conjunction with the Sun, but on the day immediately following, when it just then begins to appear as a beginning." Here too he plainly teaches that the new moon of the Cycle must follow the conjunction of

the Sun with the Moon by a full day. In the same opinion were most of the ancient Fathers, but especially Theophilus, Bishop of Alexandria [Theophilus of Alexandria], whose authority in this matter of Easter carried such weight with the Roman Pontiffs that the Western Church for many years celebrated Easter according to his computation and prescription — as is clear from the letters of that great Pope Leo [Leo I] to the Emperor Marcian [Marcian] and to the Empress Eudoxia [Licina Eudoxia].

[Margin: Which is the fourteenth Moon according to Theophilus and St. Cyril.]

Now this Theophilus, as St. Cyril [St. Cyril of Alexandria], his successor in the bishopric, reports, judged (as Paul of Middelburg [Paul of Middelburg], Johannes

Stöffler [Johannes Stöffler], and other computists testify) that the Moon which, by the Cycle and the practice of the Church, is to be called the fourteenth is the one which others, from the astronomical tables, called the sixteenth from the conjunction; and this same opinion St. Cyril strives with all his might to confirm. From which it sufficiently appears that he did not take the first Moon, for the celebration of Easter, to be on the day on which the Sun is conjoined with the Moon, but nearly two days after.

[Margin: Rightly do the Epacts of the new Calendar indicate the new moons after the mean conjunctions.]

And so our Epacts have been handled not unhappily, since they have been so distributed in the Calendar that their Paschal new moons generally *follow* the conjunctions — now by fewer hours, now by more, as the nature of the Cycle bears, and as that arrangement of alternating lunations of 30 and 29 days allows. For in this matter we have both imitated those ancient Fathers and, by preserving that arrangement of the Epacts, Easter is celebrated at a more fitting time — as is clear from what we have said, and will be clearer still from Chapter 22, when we treat of the movable feasts.

10. Finally, that it is neither absurd nor new nor unheard-of in the Church of God to call a Moon the "first" — that is, to call it the first day of the lunar month — when the conjunction of the luminaries in the heavens has already preceded by a full day and more (so that that Moon should already be called the second day, or the second day of the lunar month) — this a man will readily persuade himself of, if he has considered a little more carefully that, even in the civil solar year, a certain day is sometimes called the "first" which more truly ought to be called the "last" of the year;

[Margin: That in the civil solar year that day is sometimes called the first which more truly would be the last.]

and likewise that, in the months of the solar year, a certain day is sometimes called the "last" of one month, which in fact ought to be the first of the following month.

[Margin: That a certain day is sometimes called the last of one month, which more truly should be called the first of the following month.]

This is clear as follows. Suppose the Sun on the first day, say, of January, in the first year after a leap year, after the completion of 365 days, cannot at noon of that same first day return to the same point, but returns to it only about 6 hours

later — the hours which in common years are neglected as a day — namely toward sunset. In the second year, it returns about 12 hours later, toward the following midnight; and in the third, 18 hours later, that is, toward the sunrise of the second day of January. That second day, then, would more rightly be called the "first" day of January, since the Sun then completes the period of its course; and yet we still name it the first day of the year, whereas it ought more truly to be reckoned the last day of the preceding year.

Again, suppose the Sun on the first day, say, of March, in the third year after a leap year, at 6 hours before noon — that is, about sunrise — holds a certain fixed point in the heavens. It comes about that in the following leap year, on account of the added intercalary day, it returns to that same point on the last day of February, which then has 29 days — not at sunrise, but nearly 6 hours later, that is, about noon. This last day of February, then, would rightly be called the first day of March, since on it the Sun has returned to the same point of the heavens where we had placed it on the first day of March of the preceding year; and yet we still call that same day the first of March, which more truly ought to be called the second.

[Margin: That day is sometimes called the last of some month which more truly ought to be called the first of the following month.]

And so, as you see, we are sometimes forced to call some day in the civil solar year the "first" or the "second," which nevertheless is off from the first or the second by 6 hours, or 12, or 18; and we tolerate this error until, at the completion of four years, it is corrected by the intercalation of a single day. Why then should we wonder if, in the civil lunar year — on account of the hours and fractions of an hour omitted in a single lunation, and on account of the added day in a leap year, and finally on account of other causes — the Church is forced sometimes to pronounce a Moon "first" which more truly would be the second, and tolerates this error until it is compensated by the embolisms and the other lunar equations? But this will be better understood from what follows: that the Epacts have been rightly arranged in the Calendar.

CAPVT XIX.

Various doubts are resolved concerning the description of the Epacts in the Calendar, and their equation; and at the same time it is further confirmed that the Epacts have been most correctly described in the Calendar, and equated.

That it may be understood more clearly that the Epacts are correctly arranged in the Calendar and equated, I think it will be worth the effort if I briefly dissolve and refute the objections that some are accustomed to raise against them — although I do not see what arguments could be brought that would not be easily resolved from what we have said thus far.

[Margin: First argument against the Epacts.]

First, some accuse the Epacts on this ground: that the new moons and full moons found from them do not agree entirely with the true or mean new moons and full moons, but that the former nearly always fall before the latter.

[Margin: Solution of the first argument.]

But this argument is of no weight. For we freely and readily grant that the Epacts' new moons generally follow the celestial conjunctions; and we disclosed the reason why this must of necessity be so in a Cycle in the preceding chapter, at Num. 8. But although the Cycle of Epacts deliberately postpones the new moons for the sake of the correct celebration of Easter, it nevertheless does not allow them to stand far from the true ones — so that it is worth while to know them even as thus postponed;

[Margin: That the Cycle of Epacts shows, in the Calendar, how many days have usually elapsed after the true conjunction.]

especially since from the Cycle we learn how many days the Moon usually has after the true conjunction, so that when the Moon is called first, second, third, fourteenth, and so on, we understand that it is roughly the first, the second, the third, the fourteenth day, and so on, elapsed since the conjunction.

2. Others, next, object — on account of the equation-table set out in Chapters 11 and 12 — that the Paschal full moons of very many years in the new Calendar belong to the second month, although they are nevertheless ascribed to the first month.

[Margin: Second argument against the Epacts.]

To confirm this they adduce these years: 1609, 1628, 1647, 1666, 1685 — in all of which the golden number is 14.

(Caput XIX continues; the second argument against the epacts is still being stated.)

is 14, and the epact 24, whose Paschal term [*terminus paschalis*] is 18 April. For in all these years, they say, the calculation shows that the 14th Moon [*Luna XIV*]

belongs to the second month. They throw the cause of the error onto the equation-table [*tabula æquationis*] of the epacts and of the lunations, and onto the unequal anticipation of the lunations and of the equinox — since the latter anticipates by one day sooner than the former. For they do not understand how it can come about that from the year 1582 up to 1700 exclusive the golden number [*aureus numerus*] 14 — exhibiting, according to the equation-table, the epact 24 — should place the Paschal 14th Moon on 18 April, establishing that it belongs to the first month; whereas from the year 1700 up to 1900 exclusive the same golden number 14 — exhibiting the epact 23 — should advance the Paschal 14th Moon from 18 April to 21 March, exactly as if that earlier Moon no longer belonged to the first month but to the second.

Indeed, they assert that much grosser absurdities follow in the years after that, for the same reason. For from the same year 2200 up to 2300 exclusive the golden number 17 exhibits, according to the equation-table, the epact 24, and places the Paschal 14th Moon on 18 April. But from the year 2300 up to 2400 exclusive the same golden number 17 indicates the epact 23, and therefore advances the Moon of Easter to 21 March. Then, from the year 2400 up to 2500 exclusive, the golden number 17 once again exhibits the epact 24, and the Paschal term on 18 April, as it did before from 2200 up to 2300.

And so — they say — the new Calendar, in those years in which the golden number is 17, from the year 2200 up to 2300 exclusive, reckons that the 14th Moon in March will always precede the equinox, and therefore that it cannot be Paschal; but that from the year 2300 up to 2400 exclusive it will come about that this same 14th Moon of March falls either on the equinox or after it, and therefore cannot but be Paschal. And finally, from the year 2400 [up to 2500 exclusive], that the 14th Moon of March will run ahead of the Sun's entry into Aries, and so will cease to be Paschal — all of which seems to them utterly false. For how, they ask, can it happen that the equinox, whose anticipation is always faster than the anticipation of the lunations, should soon again strip the 14th Moon — which had begun to be the Paschal term — of that office? This, they say, is surely a most absurd thing, being altogether unheard of, and diametrically opposed both to the whole of astronomy and to truth.

By a similar argument they strive to demonstrate that many Paschal terms in the new Calendar belong to the last month, though the epacts nonetheless assign them to the first month. For since it was said near the end of Chapter 6 that the vernal equinox can recede from 21 March up to the 23rd, if the prescribed equation is applied, it will be possible for any 14th Moon that falls between 20

March and the true day of the equinox after the 21st to be taken by the new Calendar as a Paschal term — even though such a 14th Moon does not belong to the first month of the following year but to the last month of the preceding year, since the vernal equinox comes after it.

3. [Margin: Solution to the second argument.] Since this argument seems to strike at the head of the whole Gregorian correction, it must be refuted somewhat more carefully. The adversaries who assail the new Calendar with this argument evidently accuse all the mathematicians of the whole world — who confess with one voice (as the matter itself declares) that the equinox, once it has advanced toward the beginning of the month, cannot be restored to its former seat except by removing from some year as many days as it is found to have advanced toward the beginning of the month. Yet the adversaries, drawing on some new breed of astronomers, reproach the new Calendar on this very ground: that by omitting the intercalary day in certain hundredth years (which is to take one day out of the year) it restores the equinox to the day from which it had receded. Why, in the end? Because, they say, from this removal of a day it follows that a 14th Moon which before was Paschal soon ceases to be Paschal, and one which before could not be Paschal soon cannot but be Paschal. A great sin indeed! — and to avoid committing it, the equinox must never be recalled to its own seat, however far it has slipped toward the beginning of the month, since it cannot be recalled in any other way. Fine mathematicians, truly, who — in order to convict the new Calendar of being crammed with countless absurdities and manifold falsehood — hold that every correction of the year whatsoever, however it might in the end be devised, must be rejected! For in any correction of the year it is necessary that several days be removed, so that the equinox may return to the day from which it had departed toward the beginning of the month — which seems absurd to them, and in no way to be granted. For if they admitted this removal, they would at last necessarily concede, willing or not, that a 14th Moon which now, while some particular number of the Cycle is running, is Paschal, will soon, after the elision of one day, no longer be Paschal — and the reverse. And by what reasoning this can happen I shall not be reluctant to teach them here, if they are willing to learn, since they confess that they are ignorant of it. This, then, is how the matter stands.

4. [Margin: When a transit is made from an upper line of the expanded table to a lower one, the Paschal new moon of 5 April ceases to be Paschal, and the non-Paschal new moon of 7 March begins to be Paschal.] Whenever a transit is made from some line of the epacts of the expanded table to a lower line — as necessarily happens in the hundredth years that are not bissextile, in which

nevertheless the Moon is not to be equated — then, if to some golden number there corresponded in the earlier line the epact 23, the new moon of that golden number [fell] on 5 April, where the last Paschal new moon lies; but the new moon of the same golden number on 7 March was not Paschal. In the later line, however, the new moon of the same golden number in April will no longer be Paschal, since that same golden number in the lower line then corresponds to the epact 24, which has its 14th Moon on 9 April and its new moon on 6 April — beyond the Paschal limits, of course. Yet the same golden number will then have its Paschal new moon in the month of March, because the epact 23 that corresponds to it is placed at 8 March, where the beginning of the Paschal new moons is. You see, then — unless perhaps you wish to be blind — that the new moon of that golden number is Paschal in the month of April while the upper line of epacts is in use, but ceases to be Paschal when the lower line of epacts is employed? And likewise that the new moon of the same golden number in the month of March, while the earlier line of epacts is in use, is not Paschal, but begins to be Paschal when the later line of epacts serves? That this is not absurd, as the adversaries suppose, but altogether necessary, astronomical reasoning will clearly persuade you. For when the intercalary day is omitted in some hundredth year, if the Moon does not then need equating, all the new moons descend one day in the Calendar toward the ends of the months. Therefore the new moon that previously fell on 5 April is Paschal, but afterward, falling on 6 April, ceases to be Paschal. Conversely, a new moon falling previously on 7 March is not Paschal, but afterward, falling on 8 March, becomes Paschal.

5. [Margin: When a transit is made from a lower line of the table to the one above, the Paschal new moon of [8?] March ceases to be Paschal, and the non-Paschal new moon of 6 April begins to be Paschal.] Again, whenever a step is made from some line of the epacts of the expanded table up to an upper line — as necessarily happens in the hundredth bissextile years, in which the Moon is to be equated — then, if to some golden number there corresponded the epact 23 in the lower line, the new moon of that golden number will be Paschal on 8 March, where the Paschal new moons begin; but the new moon of the same golden number

on 6 April was not Paschal. In the upper line, however, since that same golden number now indicates the epact 24, the new moon of that golden number, falling on 7 March, ceases to be Paschal, while another, falling on 5 April, is made Paschal. Here again you discern that the new moon of that golden number in the month of March is Paschal while the lower line is in use, but is deprived of that office when the upper line is taken up. Likewise, that the new moon of the same

golden number in the month of April is not Paschal so long as the lower line of epacts is employed, but becomes Paschal as soon as the upper line is received into use. Of this too the astronomical reasoning is as follows. When the intercalary day is retained in some hundredth year, and the Moon is to be equated, all the new moons ascend one day toward the beginnings of the months in the Calendar. For this reason a new moon falling, before the Moon is equated, on 8 March is Paschal; and after the Moon has been equated, falling on 7 March, it can no longer be Paschal. By like reasoning a new moon falling, before that equating of the Moon, on 6 April is in no way Paschal; and after the same equating, falling on 5 April, is made Paschal.

Now indeed I cannot sufficiently marvel at the face and expression with which they dare to affirm that in these five years — 1609, 1628, 1647, 1666, 1685 — in which the golden number is 14 and the epact 24, the 14th Moon that by the new Calendar falls on 18 April belongs to the second month and not to the first. For that this is false is clear from the following little table, where it appears that the mean oppositions [*oppositiones mediæ*] in April are Paschal, since they do not fall after 19 April, the end of the Paschal full moons; whereas the mean oppositions in March are not Paschal but belong to the last month of the preceding year, because they occur before 22 March — where the beginning of the Paschal full moons is set — and therefore do not follow the day of the equinox, which nonetheless the ecclesiastical decrees require.

Anni Domini	Aur. Num.	Epac tæ	[Oppositiones mediæ Aprilis Paschales] D	[Oppositiones mediæ Martij non Paschales]	
				HMD	HM
1609	14	xxiii	18	1 1 20	0 2
		j		3 1	7
1628	14	xxiii	18	5 4 19	1 5
		j		3	6 9
1647	14	xxiii	18	2 1 20	9 3
		j		2 6	2
1666	14	xxiii	18	1 4 20	2 4
		j		4 8	
1685	14	xxiii	18	7 2 19	1 3
		j		1	8 7

(Table headings, verbatim: "Anni Domini." | "Aur. Num." | "Epactæ" |
"Oppositiones mediæ Aprilis Paschales." over columns D | H | M | "Oppositiones

medice Martij non Paschales." over columns *D | H | M*. The two three-column panels give days, hours and minutes of the mean full moon.)

But so that this too may be evident — that the golden number 14 from the year 1700 to 1900 rightly throws the Paschal lunation back out of April into March (which they cannot stomach), and that the golden number 17 from the year 2200 to 2300 fittingly exhibits it in April, but from the year 2300 to 2400 in March, and finally from the year 2400 to 2500 most aptly assigns it to April — we have computed the following mean oppositions. Here it appears that the mean full moons [*plenilunia media*] of golden number 14, or of epact 23, in April from the year 1700 to 1900 are not Paschal but fall in March, since there they follow 19 April, after which there is no mean Paschal full moon. This is so that Easter — which sometimes, after the last Paschal 14th Moon that is assigned to 18 April, falls on 19 April — may not be celebrated before the mean full moon, but may here [in March] follow 21 March, appointed to the equinox, as reason demands. But from the year 2200 to 2300, the mean oppositions of the month of March,

Anni Domini	Aurei Numeri	Epa ctæ	[Plenilunia media non Paschalia] D	m e ns .	[Plenilunia media Paschalia] D	m e ns .
1723	14	xxii j	19	A pr .	21	M ar .
1818	14	xxii j	20	A pr .	21	M ar .
1837	14	xxii j	19	A pr .	21	M ar .
1875	14	xxii j	20	A pr .	21	M ar .
2201	17	xxii ij	20	M ar .	18	A pr .
2220	17	xxii ij	19	M ar	18	A pr

Anni Domini	Aurei Numeri	Epactæ	[Plenilunia media non Paschalia] D	m e ns .	[Plenilunia media Paschalia] D	m e ns .
2239	17	xxii ij	20	M ar	18	A pr
2258	17	xxii ij	20	M ar	18	A pr
2277	17	xxii ij	19	M ar	18	A pr
2296	17	xxii ij	19	M ar	17	A pr
2315	17	xxii j	19	A pr	21	M ar
2372	17	xxii j	20	A pr	21	M ar
2429	17	xxii ij	20	M ar	18	A pr
2448	17	xxii ij	19	M ar	18	A pr
2486	17	xxii ij	20	M ar	18	A pr

(Table headings, verbatim: "Anni Domini." | "Aurei Numeri." | "Epactæ" | "Plenilunia media non Paschalia." over columns D | H | M | [month] | "Plenilunia media. Paschalia." over columns D | H | M | [month]. Parsing notes: the month abbreviation "Apr./Mar." is a separate cell to the right of each D/H/M triad. The

2220 Paschalia month prints as "Apr:" with a colon, transcribed as "Apr." All hour cells are < 24 and minute cells < 60; no numerical impossibles.)

when the golden number is 17 and the epact 24, are not Paschal, because they do not follow 21 March, appointed to the equinox; but the mean oppositions of the month of April are Paschal, since they do not extend beyond 19 April. Likewise, the mean oppositions of April from the year 2300 to 2400, when the golden number is 17 and the epact 23, are not Paschal, because they follow 19 April, just as from the year 1700 to 1900; but the mean oppositions of the month of March are Paschal, since they follow the day of the equinox. Finally, the mean full moons in March from the year 2400 to 2500, when golden number 17 and epact 24 concur, are not Paschal, but in April they are Paschal, just as from the year 2200 to 2300, for the reason we set out there. From all this it can be manifest to anyone that what the adversaries say is false — namely, that while epact 24 is current [the full moons] more truly belong to the second month; and likewise that many are assigned to the first month in March, while epact 23 is current, which rather look to the last month of the preceding year.

[Margin: That no cycle, in whatever manner it is set out in the Calendar, can avoid sometimes exhibiting the 15th Moon [Luna xv — thus printed; the body text has *Luna xiiij* throughout] in the second month or the last, which it nevertheless calls Paschal.] But if it should sometimes happen, on account of that transit from one line of the epacts of the expanded table to another, that some Paschal full moon of the Calendar turns out to belong to the second month or the last (for I cannot deny that this sometimes occurs, though rarely), this is not to be laid to the equation of the table, since it has been most correctly constituted, but is to be blamed on the nature of the Cycle — because no cycle set out in the Calendar in any manner whatever can correspond to the celestial motions so accurately and exactly that it does not sometimes diverge from them; and of this, several causes have already been adduced at Num. 8 of the preceding chapter. Nor, when this happens, is the Church to be accused, as though she then acted wrongly in preferring to follow the error of the Cycle, having set aside the celestial motions. For, as we showed at length in Chapter 4, in performing her festivals she ought rather to employ Cycles than the celestial motions, if she wishes to prescribe to the Christian people something regular and easy, as is fitting. Hence it comes about that very often she is compelled, in a manner, to reject some Paschal lunations as if they were not Paschal, on this ground alone: that their 14th Moons, found by the Cycle, forestall 21 March, assigned to the equinox, even though in reality they fall on the equinox. And likewise to accept as Paschal some that are not Paschal, because their 14th Moons, according to the Cycle, fall on 21 March, to

which the equinox is fixed, although the equinox itself truly runs ahead of them. This is clearly discerned in the bissextile years, and in those that are third from a leap year. For in the former, although the equinox reaches 20 March on account of the added intercalary day, she nonetheless rejects all the lunations, as not Paschal, whose 14th days fall on 20 March — that is, on the equinox at that time — and which therefore truly belong to the last month; whereas in the latter she approves all the lunations, as Paschal, whose 14th Moons fall on 21 March, even though in those years the equinox occurs after the 21st, on account of the 18 hours omitted over three years, so that those lunations ought in reality to be reckoned as belonging to the last month and not to the first. This too we have taught more fully at Chapter 5, Num. 11 and 12.

6. [Margin: That very often no legitimate Easter could be held in a year, if the mean motions were observed by the Church, and not the Cycles.] [Margin: What the Church should do, even if in some year there is no mean Paschal full moon.] What I shall now add ought to seem still more remarkable: namely, that the Church, if she did not follow the Cycle but observed the mean motions (for she ought rather to adopt these than the true motions, if she were to propose to herself any celestial motions to follow, since the mean motions are uniform but the true ones non-uniform), could in most years have no legitimate Easter. For since in the Council of Nicaea — which was afterward confirmed by several Councils and by decrees of the Popes — only 29 days were dedicated to the Paschal full moons, namely 22 March together with those following up to and including 19 April, so that any full moon occurring before 22 March or after 19 April is not fit for celebrating Easter (because the former belongs to the last month, the latter to the second, as is clear from what has been said), it can happen that in certain years no mean full moon is found on any of those 29 days, but that in March it runs ahead of the 22nd and in April it comes after the 19th. What, then, is the Church to do in that case? Is she to let those years pass without the solemnity of Easter? By no means: rather, setting aside the astronomical full moon, she looks for the 14th Moon by the Cycle, which falls either on 21 March or on 18 April — even though, according to the laws of the astronomers (given, however, the same Paschal limits prescribed by the Councils and the Fathers), it looks either to the last month or to the second. You have examples in the years of the following table, in which the letter M signifies the month of March, and A, April.

Anni Domini	Aurei Numeri	Epa ctæ	[Plenilunia media] D	li H Mt.	[Plenilunia media] D	li H Mt.
1742	14	xxiij	20	2 1 M	19	8 5 A

Anni Domini	Aurei Numeri	Epactæ	[Plenilunia media] D	li H Mt.	[Plenilunia media] D	li H Mt.
				0 4		8
1799	14	xxiij	20	2 5 M	19	9 3 A
				0 1		5
1856	14	xxiij	20	2 2 M	19	1 1 A
				3 9		2 3
1935	17	25	19	8 4 A	20	2 4 M
				8		0
1943	6	xxiii j	19	1 1 A	20	2 3 M
				0 4		1 0
2133	6	xxiii j	19	7 3 A	20	1 5 M
				8		8 4
2190	6	xxiii j	19	9 1 A	20	2 3 M
				5		0 1
2334	17	xxiij	20	2 1 M	19	8 5 A
				0 0		4
2391	17	xxiij	20	2 4 M	19	9 3 A
				1 7		
2524	17	xxiij	20	1 3 M	19	6 1 A
				7 4		8
2581	17	xxiij	20	1 1 M	19	7 5 A
				9 1		5
2725	9	xxiii j	19	7 3 A	20	1 5 M
				4		8 0
2782	9	xxiii j	19	9 1 A	20	2 2 M
				1		0 7
2839	9	xxiii j	19	1 4 A	20	2 4 M
				0 8		2
2972	9	xxiij	20	1 5 M	19	6 3 A
				7 1		6

(Table headings, verbatim: "Anni Domini." | "Aurei Numeri." | "Epactæ" | "Plenilunia media" over columns D | H | M | [letter] | "Plenilunia media." over columns D | H | M | [letter]. Per the text, the trailing letter column of each panel gives M = March, A = April. Note the epact for 1935 is printed in Arabic figures as 25

— not Roman *xxv* — as it stands for golden number 17; all other epact cells are Roman (*xxiij* = 23, *xxiiij* = 24). All hour cells < 24 and minute cells < 60; no numerical impossibles.)

[Caput XIX continues, resolving the objections against the epacts.]

Table of mean full moons for the crossover years (A.D. 3116–4919)

In each row two mean full moons are tabulated (the two candidate Paschal full moons in the adjacent months). Sub-columns: **D** = day, **H** = hour, **M** = minute; the final letter gives the month (**A** = April, **M** = March). Epact for golden number 17 and the other Roman/Arabic distinctions are transcribed as printed.

Anni Domini	Aurei Numeri	Epact æ	Plen. media D	m o			m o			
				H	M.	D	H	M.	D	
3116	I	xxiiij	19	6	1	A	20	1	3	M
					4			7	0	
3173	I	xxiiij	19	7	5	A	20	1	7	M
					1			9		
3230	I	xxiiij	19	8	2	A	20	1	4	M
					8			9	4	
3287	I	xxiiij	19	1	6	A	20	2	2	M
					1			2	2	
3621	12	xxiiij	19	8	9	A	20	1	2	M
								9	5	
3678	12	xxiiij	19	9	4	A	20	2	2	M
					6			1		
3936	4	xxiiij	19	1	3	A	20	2	5	M
					2	9		3	5	
4012	4	xxiiij	19	6	5	A	20	1	6	M
					0			8		
4069	4	xxiiij	19	8	2	A	20	1	4	M
					7			9	3	
4213	15	xxiij	20	1	2	M	19	8	4	A
					9	0				
4270	15	xxiij	20	2	5	M	19	9	4	A

Anni Domini	Aurei Numeri	Epact æ	Plen. media D	m o		Plen. media D	m o	
				H	M.		H	M.
				0	8			2
4300	7	xxv	19	6	5 A	20	1 2 M	7 1
4460	15	xxiiij	20	1 2 M	19		7 6 A	
				8	2			
4604	7	xxiiiij	19	6 4 A	20		1 0 M	
				4			8	
4661	7	xxiiiij	19	8 2 A	20		1 3 M	
				2			9 8	
4919	18	xxiiiij	19	1 1 A	20		2 3 M	
				1	5		2 1	

In all these years you see that neither the March full moon nor the April full moon is Paschal, since both are found outside the prescribed limits. I have, however, omitted many other years in which the full moon in March falls on the 21st some hours after noon, before sunset, and in April on the 19th fewer than six hours after noon. For although the former would seem to be assigned to the last month and the latter to the second, yet because the former in March is only a little short of the 22nd day, while the latter in April has not yet wholly left the 19th day, I was unwilling to exclude them from the Paschal full moons, and I have gathered into the table only those that either precede noon of March 21 or fall on April 19 more than six hours after noon. For these, according to the decrees of the Fathers, can in no way be Paschal. And so in these years, when epact 23 is running, Easter is celebrated by the Church in the month of March, even though the mean full moon does not follow the 21st assigned to the equinox; but when epact 24 or 25 is running, the celebration of Easter is deferred by the Church into the month of April, even though the mean full moon occurs after the 19th.

[Margin: In what month the Church should celebrate Easter, when in some year there is no mean Paschal full moon.]

7. But so that no scruple may linger in the reader's mind, and that it may be left the more firmly confirmed that the epacts are excellently arranged in the Calendar and their equation rightly instituted — even though they sometimes yield Easter in the last month or in the second, indeed (as we said in Number 7 of the preceding chapter) almost before the mean opposition — we set out for

careful consideration the points that follow. First, let it be recalled that, on account of the equation of the moon and the removal of a day from certain centennial years to keep the equinox even, the same golden number that formerly offered epact 23 soon exhibits epact 24, and the reverse, and thus now throws Easter from March into April, now from April into March, as we said above in Numbers 4 and 5. So no one should be surprised if, on account of so great a change, the Easter drawn from the Cycle sometimes falls into some error, against the laws of the celestial motions.

[Margin: That the same golden number sometimes throws Easter out of March into April, and the reverse.]

8. Next, let each one consider that within one and the same span of 100 years — in which the same epacts always answer to the same golden numbers, that is, in which one and the same line of the expanded epact-table is put to use — the same epact by number indicates the Paschal 14th moon now before the mean opposition, now after it. For, to bring forward a few examples out of many: in the year 1627 epact 13 exhibits the Paschal 14th moon on March 31, before the mean opposition, which occurs in March, on the 31st, at the 8th hour after noon. But in the year 1684 the same epact 13 again places the 14th Paschal moon on March 31, after the mean opposition, since this falls on March 30, at the 10th hour after noon. Likewise in the year 1610 epact 5 has its 14th moon on April 8, before the mean opposition, which falls on April 8, at the 22nd hour after noon. But the same epact 5, in the year 1648, again sets its 14th moon on April 8, although it follows the mean opposition, which then occurs on April 7, at the 7th hour after noon. The same is seen in the years of the following little table — to pass over many others that can be drawn from the great table of chapter 22, where from the year 1600 to 5000 we have computed all the mean Paschal oppositions, the Paschal 14th moons likewise, the Dominical letters, together with the feast days of Easter, and so forth — just as we have excerpted from that same table the years written below.

[Margin: That the same golden number, from one centennial year to the next following centennial, in certain years exhibits the 14th moon now before the mean opposition, now after it.]

Excerpted years (A.D. 1700–2388)

Columns: **Anni Domini** | **Aur. Num.** | **Epactæ** | **Lunæ xiiij.** (day + month letter)
| position relative to the mean opposition | **Oppositiones mediæ** (D, H, month

letter). The asterisk (*) in the Epactæ column is the new-Calendar form of epact 30.

Anni Domini	Aur. Num.	Epact æ	Lunæ xiiij.		Opp. mediæ D	m o H .
1700	10	ix	4 Apr	Ante opp. med.	4	1 A 1
1776	10	ix	4 A	Post opp. med.	3	5 A
1711	2	xj	2 A	Ante opp. med.	2	1 A 5
1768	2	xj	2 A	Post opp. med.	1	1 A 5

*(The excerpt continues on the next page, printed 358, running header "CALEND.
GREG.")*

Anni Domini	Aur. Num.	Epact æ	Lunæ xiiij.		Opp. mediæ D	m o H .
1800	15	iiij	9 A	Ante opp. med.	9	1 A 9
1876	15	iiij	9 A	Post opp. med.	8	1 A 4
1851	9	xxviiij	15 A	Ante opp. med.	15	1 A 5
1889	9	xxviiij	15 A	Post opp. med.	14	9 A
1823	19	xviiij	26 M	Ante opp. med.	26	1 M 2
1880	19	xviiij	26 M	Post opp. med.	25	1 M 4
1927	9	xxvij	16 A	Ante opp. med.	16	1 A 7
1984	9	xxvij	16 A	Post opp. med.	15	1 A 4

Anni Domini	Aur. Num.	Epact æ	Lunæ xiiij.		Opp. mediæ D	m o H .
2008	14	xxij	22 M	Ante opp. med.	21	1 M 2
2027	14	xxij	22 M	Post opp. med.	22	4 M
2235	13	x	3 A	Ante opp. med.	3	9 A
2292	13	x	3 A	Post opp. med.	2	1 A 1
2302	4	*	13 A	Ante opp. med.	13	6 A
2340	4	*	13 A	Post opp. med.	12	1 A 5
2344	8	xiiij	30 M	Ante opp. med.	29	1 M 5
2363	8	xiiij	30 M	Post opp. med.	30	8 M
2314	16	xij	1 A	Ante opp. med.	1	1 A 9
2352	16	xij	1 A	Post opp. med.	31	4 M
2307	9	xxv	18 A	Ante opp. med.	18	4 A
2364	9	xxv	18 A	Post opp. med.	17	5 A
2327	10	vj	7 A	Ante opp. med.	7	5 A
2384	10	vj	7 A	Post opp. med.	6	7 A
2331	14	xx	24 M	Ante opp. med.	24	5 M
2388	14	xx	24 M	Post opp. med.	23	7 M

Who, then, would say that the epacts are not rightly placed in the Calendar, or that their equation is wrongly instituted? Who does not see that, if the epacts indicated the new moons earlier (as some would have it) — that is, if the higher line of the epacts in the expanded table were taken, or the epacts themselves were advanced upward by one day — the 14th moons that are now found before the mean oppositions would run still further ahead of them, while those that now occur after the mean oppositions would then either anticipate them or come nearer to them? Granting this, who would not observe that Easter would very often have to be celebrated before the mean full moon, which is contrary to the decrees of the Fathers? Who, again, does not see that, if the epacts showed the new moons later — that is, if the lower line of the epacts in the expanded table were used, or the epacts themselves were drawn down by one day — the 14th moons that now fall after the mean oppositions would recede further from them, while those that now anticipate the mean oppositions would then either follow them or not run so far ahead? If this were done, who would not understand that Easter would not rarely have to be deferred to the 22nd and 23rd moon — that is, into the fourth week — against the decrees of the Fathers? Therefore, lest some epacts should show their 14th moons more than is fitting before the mean oppositions, and others further than is proper after the mean oppositions, we have arranged them in the Calendar through the days, and equated them, most correctly, so that between the extremes they always proceed by a middle course in the anticipation and postposition of the 14th moons. And no one can rightly find fault with this, since nothing more excellent of this kind could be devised.

[Margin: That the epacts are rightly placed in the Calendar and correctly equated is clearly demonstrated from what has just been said.]

But if we are unwilling to observe the 14th moons of one and the same epact, and instead examine the 14th moons of various epacts, we shall again discover, within the same century — that is, in the years enclosed between two successive centennial years — that some of these epacts show the 14th moons before the mean full moons, while others throw them off after the mean oppositions, as is plain from the same preceding table, where you see the 14th moons of certain epacts precede the mean oppositions, and those of others follow them; and the same can also be seen in the following table. The epacts, therefore, could not have been described in the Calendar by any better method than the one we have used. For if you wished to correct the later ones, you would feel a greater anticipation in the earlier ones; but if you strove to roll the earlier ones downward, the later ones would necessarily postpone their 14th moons much more. With the best judgment, therefore, they have been set in a kind of middle state in the new

Calendar. But see here a few years of this present, current century — 1600 — drawn from that aforesaid table of chapter 22, countless others being left aside so as not to be too long-winded, in which some epacts advance their 14th moons, while others retard them.

[Margin: In the years of the same century, some of the epacts show their 14th moons before the mean oppositions, others after them.]

Years of the current century (A.D. 1603–1696), grouped by position relative to the mean opposition

Columns: **Anni Domini** | **Aur. Num.** | **Epactæ** | **Lunæ xiiij.** (day + month letter) | **Oppositiones mediæ** (D, H, month letter). The source brackets the upper block as *Ante opp. med.* and the lower block as *Post opp. med.*

Ante opp. med. (the 14th moon before the mean opposition):

Anni Domini	Aur. Num.	Epactæ	Lunæ xiiij.	Opp. mediæ D	m H o.	
1603	8	xviiij	26 M	26	1	M 8
1609	14	xxiiij	18 A	17	1	A 3
1610	15	v	8 A	8	2	A 2
1615	1	j	12 A	12	2	A 0
1617	3	xxiiij	21 M	21	1	M 3
1619	5	xv	29 M	29	1	M 9
1635	2	xij	1 A	1	2	A 1
1647	14	xxiiij	18 A	18	2	A 2
1654	2	xij	1 A	1	1	A 3
1655	3	xxiiij	21 M	21	2	M

Anni Domini	Aur. Num.	Epactæ	Lunæ xiiij.	Opp. mediæ D	m H o.
					2
1666	14	xxiiij	18 A	18	1 A 5
1674	3	xxij	21 M	21	1 M 5
1675	4	iiij	9 A	9	1 A 2
1679	8	xviiij	26 M	26	1 M 2
1691	1	j	12 A	12	1 A 4

Post opp. med. (the 14th moon after the mean opposition):

Anni Domini	Aur. Num.	Epactæ	Lunæ xiiij.	Opp. mediæ D	m H o.
1604	9	xxix	14 A	13	1 A 6
1608	13	xij	31 M	30	1 M 6
1612	17	xxvij	16 A	15	4 A
1613	18	vij	5 A	4	6 A
1629	15	v	8 A	7	1 A 5
1632	18	vij	5 A	4	6 A
1652	19	xix	25 M	24	7 M
1664	12	ij	11 A	10	8 A
1668	16	xvj	28 M	27	8 M
1669	17	xxvij	16 A	15	6 A
1684	13	xij	31 M	30	1 M 0
1688	17	xxvij	16 A	14	2 A 3

Anni Domini	Aur. Num.	Epactæ	Lunæ xiiij.	Opp. mediæ D	m H o.
1689	18	viiij	5 A	4	7 A
1690	19	xix	25 M	24	1 M 6
1696	6	xxvi	17 A	16	1 A 1

Do not suppose that it happens only in the Cycle of the Epacts that within the same century some epacts exhibit their 14th moons before the mean opposition, and some after — indeed (what may seem more remarkable) that one and the same epact by number exhibits, within the same century, the 14th moon now before the mean full moon, now after it. I shall show that the same thing occurred in the Cycle of the golden number, which the Church, having received it from the Council of Nicaea, always used down to the Gregorian correction for tracking the movable feasts. I shall, however, pass over the years around the time of the Council of Nicaea, because at that time the golden numbers showed the new moons earlier than was right, and thus all the 14th moons very often preceded the mean full moons before the mean oppositions, and very rarely came after them. I shall likewise omit the years that preceded the restoration of the Calendar by no great interval, because at that time those same golden numbers indicated the new moons later than was proper, and thus all the 14th moons followed the mean oppositions and did not precede them. I take only the years around the time of the Emperor Justinian, beginning from the year 532, when at last the golden numbers, inscribed in the Calendar by Dionysius Exiguus [Dionysius Exiguus], were showing the new moons more correctly according to the practice of the Church — that is, neither too early nor too late. And I confine myself within the space of three hundred years, because within so great a span the moon would not have required an equation, and so the anticipation and postposition of the 14th moons cannot be referred to that neglected equation. In these years written below, then, you especially see the same golden number exhibiting the 14th moon before the mean full moon, and sometimes after it; likewise some golden numbers anticipating, and some postponing, their 14th moons. Here indeed you see that in these four years — 535, 551, 555, 571 — the 14th moons are anticipated more than is fair, so much so that, had they fallen on a Saturday, Easter would have been celebrated almost before the mean opposition; which must surely seem remarkable, since even at that time the golden numbers indicated the new moons late enough that the danger might rather have been that the 14th moons would be postponed too much — as you see happened in the years 664 and 690,

in which Easter would have been celebrated on the 22nd moon by mean motion, in the fourth week, had the 14th moon fallen on a Sunday.

[Margin: In the old Calendar, in the time of the Emperor Justinian, the same golden number showed the 14th moon now earlier, now later; likewise some golden numbers anticipated their 14th moons, others postponed them.]

Furthermore, in the years 604 and 661 the mean opposition did not occur after the equinox fixed on March 21, and therefore it should be reckoned as belonging rather to the last month than to the first, if the Council of Nicaea is to remain in force. Yet none the less the mean opposition of those same years was Paschal in April, since it fell on the 19th at about the 7th hour after noon — that is, after the last term of the Paschal full moons. And so, for those...

[Margin: In the old Calendar, in certain years no mean Paschal full moon is found.]

(Text continues onto the following leaf, mid-sentence.)

Caput XIX (continued)

[The two tables below stand at the head of this leaf; they display the same-golden-number full moons of the old Nicene cycle discussed in the preceding paragraphs. In both, the month-letters are M = March and A = April; "Aur. Num." is the golden number (aureus numerus); "Lunæ xiiij." is the fourteenth of the moon (the cyclic Paschal full moon); "Plenilunia media" are the mean full moons, given as D (day), H (hour), and month-letter.]

Table 1 — mean full moons compared with the cyclic 14th moon

Anni Domini	Aur. Num.	Lunæ xiiij.	Position	Plenilunia media — D	(month H th)
539	8	18 A	Ante opp. med.	18	1 A 7
672	8	18 A	Post opp. med.	17	1 A 2
599	11	15 A	Ante opp. med.	15	9 A
656	11	15 A	Post opp. med.	14	1 A 0
543	12	4 A	Ante opp.	4	1 A

Anni Domini	Aur. Num.	Lunæ xiiij.	Position	Plenilunia media — D	(mon H th)
			med.		7
600	12	4 A	Post opp. med.	3	1 A 2
547	16	21 M	Ante opp. med.	21	1 M 7
680	16	21 M	Post opp. med.	20	1 M 2
567	17	9 A	Ante opp. med.	9	8 A
624	17	9 A	Post opp. med.	8	8 A
568	18	29 M	Ante opp. med.	29	1 M 5
701	18	29 M	Post opp. med.	28	1 M 1

Table 2 — the same, grouped by whether the cyclic 14th moon falls before or after the mean opposition

Anni Domini	Aur. Num.	Lunæ xiiij.	Position	Plenilunia media — D	(mo nth)
533	2	25 M	Ante oppositionem mediam	25	M
535	4	2 A	Ante oppositionem mediam	3	A
551	1	5 A	Ante oppositionem mediam	6	A
555	5	22 M	Ante oppositionem mediam	23	M
570	1	5 A	Ante oppositionem mediam	5	A
571	2	25 M	Ante oppositionem mediam	26	M
574	5	22 M	Ante oppositionem	22	M

Anni Domini	Aur. Num.	Lunæ xiiij.	Position	Plenilunia media — D	(mo nth)
			mediam		
590	2	25 M	Ante oppositionem mediam	25	M
588	19	17 A	Post oppositionem mediam	16	A
607	19	17 A	Post oppositionem mediam	16	A
640	14	12 A	Post oppositionem mediam	11	A
645	19	17 A	Post oppositionem mediam	16	A
664	19	17 A	Post oppositionem mediam	16	A
681	17	9 A	Post oppositionem mediam	8	A
690	7	30 M	Post oppositionem mediam	28	M
700	17	9 A	Post oppositionem mediam	8	A
604	16	21 M	Post oppositionem mediam	20	M
661	16	21 M	Post oppositionem mediam	20	M

for those years, if the mean motion had had to be observed rather than the Cycle, no Easter could have been legitimately celebrated. This is just what we asserted above, at Num. 6, concerning certain years even after the correction. You see, then, that exactly the same thing happened in the old Calendar as well — and indeed in precisely those periods which the Church, by its practice, most fully approved for everyone — the very things which our opponents do not shrink from attacking so fiercely in the new Calendar, and without cause.

[Margin: That four errors cannot be avoided in any calendar, and what they are.]

9. THIRDLY, I should wish that those who are so hotly bent on assailing the arrangement of the Epacts and the equation in the new Calendar would

consider carefully that no civil calendar, in which the Lunar Cycle is set out — whether by golden numbers or by Epacts — can so avoid and escape four errors as never occasionally to fall into them. For, first, whatever equation of the solar year be established, the equinox cannot be held so firmly to March 21 that it does not range freely to either side of it, even though it returns to that day of its own accord in the meantime. This happens of necessity because of the unequal and irregular motion of the true equinox, as was explained at length in chapters 6 and 7. Indeed, even if the motion of the equinox were always equal and uniform, it still could not always cling to the same day, on account of the common and the bissextile years, as we declared at chapter 5, Num. 11, and elsewhere. Next, it cannot be avoided that the Cycle — whatever it may be in the end — will sometimes offer an Easter to be celebrated on the 14th of the moon before the mean full moon; because, as we said at Num. 8 and 9, the same number of the Cycle within one and the same century now anticipates the 14th moon, now postpones it. Likewise the 14th moons of some numbers run ahead of the mean oppositions, while the 14th moons of other numbers follow those same mean oppositions. Thirdly, so that the Cycle may not present us with an Easter before the mean full moon more often than we wish, it is necessary for it to mark the New Moons in the Calendar later than they actually occur in the heavens. This our Epacts in the new Calendar carefully see to, since they are arranged in it so that for the most part their New Moons fall a whole day, and some-

times more, after the celestial New Moons — although now and then, though rarely, the two do not differ, and consequently the 14th moons then run ahead of the mean oppositions by more than is proper. This fault is found in every Cycle; on which matter we have written more at chapter 18, Num. 5 and 6. Fourth and last, whether we will or no, we are compelled at times, by the very nature of the Cycle — whatever it be, and however it is arranged in the Calendar — to throw Easter out of the first month, now into the second, now into the last, that is, the twelfth: namely whenever the Paschal 14th moon precedes March 21 but follows, or coincides with, the day on which the equinox falls, should the true equinox happen to occur before March 21; or again, whenever the equinox comes after March 21, but the Paschal 14th moon runs ahead of that same equinox, provided it is not found before the 21st. But we have written more on this at Num. 5 and in other places. These, then, are the four errors — if it is to be called an error, when it must be admitted at times not rashly but of necessity — which cannot be avoided in any Calendar that is set up, as is proper, by cycles and rules easy to grasp and uniform. This alone must be carefully guarded against: that the Cycle

described in the Calendar should thrust us into these errors as rarely as possible — which, as can readily and plainly be gathered from what has been shown so far, belongs to this our Epact-Cycle alone.

Caput XX

The Finding of the Solar Cycle for any Given Year

WE have expounded so far the matters that carry the greater difficulty in this business of the correction — all those, that is, which pertain to the solar and the lunar year, to the end that the equinox may, as far as possible, be kept in its own seat, and the Paschal 14th moon rightly displayed in the Calendar. Now let us run through the remaining matters of lesser moment, which are nonetheless wholly necessary for the understanding of the Calendar. In the first place there presents itself the Solar Cycle, which is nothing else than a revolution of 28 years — this because the dominical letters, for whose sake alone this Cycle was devised, return in exactly the same order after 28 years, as we shall teach in the following chapter. From this it has come about that the Solar Cycle is also called the Cycle of the Dominical Letters. And although the Solar Cycle is not simply and absolutely necessary to us — since without it we can find the dominical letter of any year far more expeditiously, as will be clear from the following chapter — nevertheless, because the Church always used it before the Gregorian correction for tracking down the dominical letter, it will not be out of place to teach by what device this Cycle is to be found for any given year, and by what method the dominical letter is to be drawn from it, both before the correction and after.

[Margin: What the Solar Cycle is.]

[Margin: The Cycle of the Dominical Letters is the same as the Solar Cycle.]

2. NOW, setting aside the rules handed down in Canon 3 of the perpetual Gregorian Calendar, which we placed at the beginning of this work, we shall here construct a most expeditious table, from which the Solar Cycle of any proposed year may be drawn, taking our start from the year of the Lord 1, in which the Solar Cycle was 10 — in this manner, namely. Let all 28 numbers of the Solar Cycle be set out in order in a little table, beginning from the number 10 of the Solar Cycle. Then in another table let the years of the Lord be written out, beginning from 1 and advancing by continual addition of 28, as far as one pleases. To these years the Solar Cycle 10 of the first cell corresponds. Accordingly, when you would find the Solar Cycle of

any year, seek the proposed year among the years of the Lord: if it is found, you will say that in that year the Solar Cycle is 10. But if it is not found, take the year next below it and assign it to the first cell of the Solar Cycle, the following year to the second cell, the next to the third, and so on, until you reach the proposed year. For the Solar Cycle of the cell into which the proposed year falls will be the one that is sought; and its use will begin from January, just as with the golden numbers and the Epacts, as we said above.

[Margin: Rule for finding the Solar Cycle of any given year.]

For example: in the year 6021, since it is written out in the table, the Solar Cycle will be 10. But in the year 6036 the Solar Cycle will be 25. For the year 6036 falls into the cell of the number 25, if the year 6021 is assigned to the first cell, the year 6022 to the second, and so on. Likewise, in the year of the Lord 5 the Solar Cycle was 14, and in the year 85 it was 10. Finally, in the year 7777 the Solar Cycle will be 2. And so of the rest.

[Margin: The use of the Solar Cycle begins from January.]

THIS table will perhaps be more conveniently arranged by hundreds of years, as appears in the other table which follows this one.

Tabella Cycli Solaris (Table of the Solar Cycle)

Header — the 28 numbers of the Solar Cycle, in order (set as two rows of fourteen):

10	11	12	13	14	15	16	17	18	19	20	21	22	23
24	25	26	27	28	1	2	3	4	5	6	7	8	9

Anni Domini, quibus prima cellula Cyclus Solaris 10. congruit. (The years of the Lord to which the first cell — Solar Cycle 10 — corresponds.)

Side-label of the body table: *Anni Domini per 28. collecti* (the years of the Lord gathered by 28s). The ten body columns correspond to Solar-Cycle numbers 10 through 19; each cell exceeds the one above it by 28.

10		11	12	13	14	15	16		17	18	19
1		29	57	85	11	14	169		19	22	253
					3	1			7	5	

10	11	12	13	14	15	16	17	18	19
281	30	33	36	39	42	449	47	50	533
	9	7	5	3	1		7	5	
561	58	61	64	67	70	729	75	78	813
	9	7	5	3	1		7	5	
841	86	89	92	95	98	1009	10	10	1093
	9	7	5	3	1		37	65	
1121	11	11	12	12	12	1289	13	13	1373
	49	77	05	33	61		17	45	
1401	14	14	14	15	15	1569	15	16	1653
	29	57	85	13	41		97	25	
2681 [recte: 1681]	17	17	17	17	18	1849	18	19	1933
	09	37	65	93	21		77	05	
1961	19	20	20	20	21	2129	21	21	2213
	89	17	45	73	01		57	85	
2241	22	22	23	23	23	2409	24	24	2493
	69	97	25	53	81		37	65	
2521	25	25	26	26	26	2689	27	27	2773
	49	77	05	33	61		17	45	
2801	28	28	28	29	29	2969	29	30	3053
	29	57	85	13	41		97	25	
3081	31	31	31	31	32	3249	32	33	3333
	09	37	65	93	21		77	05	
3361	33	34	34	34	35	3529	35	35	3613
	89	17	45	73	01		57	85	
3641	36	36	37	37	37	3809	38	38	3893
	69	97	25	53	81		37	65	
3921	39	39	40	40	40	4089	41	41	4173
	49	77	05	33	61		17	45	
4201	42	42	42	43	43	4369	43	44	4453
	29	57	85	13	41		97	25	
4481	45	45	45	45	46	4649	46	47	4733
	09	37	65	93	21		77	05	
4761	47	48	48	48	49	4929	49	49	5013
	89	17	45	73	01		57	85	

10	11	12	13	14	15	16	17	18	19
5041	50	50	51	51	51	5209	52	52	5293
	69	97	25	53	81		37	65	
5321	53	53	54	54	54	5489	55	55	5573
	49	77	05	33	61		17	45	
5601	56	56	56	57	57	5769	57	58	5853
	29	57	85	13	41		97	25	
5881	59	59	59	59	60	6049	60	61	6133
	09	37	65	93	21		77	05	
6161	61	62	62	62	63	6329	63	63	6413
	89	17	45	73	01		57	85	
6441	64	64	65	65	65	6009 [recte: 6609]	66	66	6693
	69	97	25	53	81		37	65	
6721	67	67	68	68	68	6889	69	69	6973
	49	77	05	33	61		17	45	
7001	70	70	70	71	71	7169	71	72	7253
	29	57	85	13	41		97	25	
7281	73	73	73	73	74	7449	74	75	7533
	09	37	65	93	21		77	05	
7561	75	76	76	76	77	7729	77	77	7813
	89	17	45	73	01		57	85	
7841	78	78	79	79	79	8009	80	80	8093
	69	97	25	53	81		37	65	
8121	81	81	82	82	82	8289	83	83	8373
	49	77	05	33	61		17	45	
8401	84	84	84	85	85	8569	85	86	8653
	29	57	85	13	41		97	25	
8681	87	87	87	87	88	8849	88	89	8933
	09	37	65	93	21		77	05	
8961	89	90	90	90	91	9129	91	91	9213
	89	17	45	73	01		57	85	
9241	92	92	93	93	93	9409	94	94	9493
	69	97	25	53	81		37	65	
9521	95	95	96	96	96	9689	97	97	9773
	49	77	05	33	61		17	45	

10	11	12	13	14	15	16	17	18	19
9801	98	98	98	99	99	9969	99	10	10053
	29	57	85	13	41		97	02	
								5	
10081	10	10	10	10	10	10249	10	10	10333
	10	13	16	19	22		27	30	
	9	7	5	3	1		7	5	
10361	10	10	10	10	10	10529	10	10	10613
	38	41	44	47	50		55	58	
	9	7	5	3	1		7	5	
10641	10	10	10	10	10	10809	10	10	10893
	66	69	72	75	78		83	86	
	9	7	5	3	1		7	5	
10921	10	10	11	11	11	11089	11	11	& sic in infinitū
	94	97	00	03	06		11	14	(and so on to
	9	7	5	3	1		7	5	infinity)

[Caput XX, continued — the Solar-Cycle table of hundred-years]

[Table: Solar Cycle by hundreds of years of the Lord (printed p. 363).]

The head of the table carries the label **Cycl. Solaris**. ("Solar Cycle") over seven lettered columns **A–G**; beneath each letter stands the Solar-Cycle number to which that column corresponds. The body of each column lists the years of the Lord (reckoned in hundreds) that fall under that Solar-Cycle number.

[Margin (set vertically along the left edge): Anni Domini per 100. collecti, quibus numeri Cycli Solaris in vertice tabulæ descripti congruunt. — "Years of the Lord collected by hundreds, to which the Solar-Cycle numbers written at the head of the table correspond."]

A — ix	B — xxv	C — xiii	D — j	E — xvii	F — v	G — xxj
0	100	200	300	400	500	600
700	800	900	1000	1100	1200	1300
1400	1500	1600	1700	1800	1900	2000
2100	2200	2300	2400	2500	2600	2700

A — ix	B — xxv	C — xiii	D — j	E — xvij	F — v	G — xxj
2800	2900	3000	3100	3200	3300	3400
3500	3600	3700	3800	3900	4000	4100
4200	4300	4400	4500	4600	4700	4800
4900	5000	5100	5200	5300	5400	5500
5600	5700	5800	5900	6000	6100	6200
6300	6400	6500	6600	6700	6800	6900
7000	7100	7200	7300	7400	7500	7600
7700	7800	7900	8000	8100	8200	8300
8400	8500	8600	8700	8800	8900	9000
9100	9200	9300	9400	9500	9600	9700
9800	9900	10000	10100	10200	10300	10400
10500	10600	10700	10800	10900	11.00 [recte: 11000]	11100
11200	11300	11400	11500	11600	11700	11800
11900	12000	12100	12200	12300	12400	12500
12600	12700	12800	12900	13000	13100	13200
13300	13400	13500	13600	13700	13800	13900
14000	14100	14200	14300	14400	14500	14600
14700	14800	14900	15000	15100	15200	15300
15400	15500	15600	25700 [recte: 15700]	15800	15910 [recte: 15900]	16000
16100	16200	16300	16400	16500	16600	16700
16800	16900	17000	17100	17200	17300	17400
17500	17600	17700	17800	17900	18000	18100

A — ix	B — xxv	C — xiii	D — j	E — xvij	F — v	G — xxj
0						
1820	18300	18400	18500	18600	18700	18800
0						
1890	19000	19100	19200	19300	19400	19500
0						
1960	19700	19800	19900	20000	20100	20200
0						
2030	20400	20500	20600	20700	20800	20900
0						
2100	21100	21200	21300	21400	21500	21600
0						
2170	21800	21900	22000	22100	22200	22300
0						
2240	22500	22600	22700	22800	22900	23000
0						
2310	23200	23300	23400	23500	23600	23700
0						
2380	23900	24000	24100	24200	24300	24400
0						
2450	24600	24700	24800	24900	25000	25100
0						
2520	25300	25400	25500	25600	25700	25800
0						
2590	26000	26100	26200	26300	26400	26500
0						
2660	26700	26800	26900	27000	27100	27200
0						
2730	27400	27500	27600	27700	27800	27900
0						
2800	28100	28200	28300	28400	28500	28600
0						
2870	28800	28900	29000	29100	29200	29300
0						

A — ix	B — xxv	C — xiii	D — j	E — xvij	F — v	G — xxj
2940 0	29500	29600	29800 [recte: 29700]	29800	29900	30000
3010 0	30200	30300	30400	30500	30600	30700
3080 0	30900	31000	31100	31200	31309 [recte: 31300]	31400
3150 0	31600	31700	31800	31900	32000	32100
3220 0	32300	32400	32500	32600	32700	32800
3290 0	33000	33100	33200	33300	33400	33500

[Caput XX, continued]

CONSTRUCTION. The construction of this table — which can be extended to infinity — runs as follows. The hundred-years proceed in order from left to right, starting from the year 0, until seven cells are filled, as the table shows. Above the year 0, which is the first among the hundred-years, is written the Solar Cycle ix; from it the remaining six are formed by continually adding the number 16, always casting out 28 whenever the sum produced is greater than 28.

USE. The use of this table, moreover, is very easy, provided one takes note of this second little table of the three numbers collected by 28 that the year 0 precedes, together with the series of all 28 numbers of the Solar Cycle set out here.

Anni per 28. collecti	0	28	56	84

Series of the numbers of the Solar Cycle.

									1	1	1	1	1	1	1	1	1	1	2
1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
21	22			23	24			25	26			27	28						

To find the Solar Cycle of any year that is not greater than the last hundred-year of the preceding table: if that year is one of the hundred-years, look for it among

the years of the Lord, and at once, above it, you will find the Solar Cycle you seek. But if the proposed year is not one of the hundred-years, take from the adjoining little table of the years collected by 28 the number next smaller than the proposed year, counting from the hundred-year just passed; assign that number to the Solar-Cycle number of the accompanying series that stands written above the hundred-year after which the given year falls. To the next Solar-Cycle number of the same series assign the next year, and so on in turn — returning to the beginning of the series if need be — until you reach the proposed year. For the counting will end on the Solar Cycle sought. And if the given year, falling after some hundred-year, is itself found in the table of years collected by 28, then in that year the Solar Cycle is the one that answers to the hundred-year which most nearly precedes the given non-hundred year.

For example: in the year 1600 the Solar Cycle is 13. But in the year 1683 the Solar Cycle is 12; for by assigning, in the accompanying series, the Solar Cycle 13 (found above the year 1600) to the number 56 of the adjoining little table of years collected by 28, and the year 57 to the next Solar Cycle 14, and so on, the year 83 falls on Solar Cycle 12. Again, in the year 1748 the Solar Cycle was 1. For if, in the accompanying series, to the Solar Cycle 9 (found above the hundred-year 0) we assign the year 28 of the adjoining little table of years collected by 28 — which is next smaller than the given 48 — and the year 29 to the next Solar Cycle 10, and so on, the year 48 ends on Solar Cycle 1. Again, in the year 1810 the Solar Cycle will be 27; for if, in the accompanying series, to the Solar Cycle 17 (written above the hundred-year 1800) you assign the year 0 of the adjoining little table of years collected by 28 — which is next smaller than 10 — and the year 1 to the next Solar Cycle 18, and so on, the year 10 falls on Solar Cycle 27. Finally, in the year 1656 the Solar Cycle will be 13, which of course belongs to the year 1600, because the year 56 is set down in the table of years collected by 28. And so with the rest.

3. But we shall reduce this same table to a far easier use in the following way. Above the Solar Cycles of the aforesaid table let the seven capital letters of the alphabet be written in order; and let the same letters be repeated in the same order in this second table, and beneath each of them let all twenty-eight Solar Cycles be set out, the start being made, in each descending column, from that Solar Cycle which exceeds by one unit the Solar Cycle written beneath the corresponding letter of the upper table. Finally, alongside the same Solar Cycles, on the left, let the hundred expanded years be arranged, as you see in the following table. With the Solar-Cycle numbers and the expanded years disposed in this way, the Solar Cycle of any proposed year will be found most expeditiously. For if the given year is

one of the hundred-years, its Solar Cycle will be found at once above it in the upper table, as we said in the use of that table. But if the proposed year is not a hundred-year, its Solar Cycle will be found in this table, in the row of the given expanded year, in that descending column of Solar-Cycle numbers over which is placed the same letter that answers, in the upper table, to the hundred-year most recently passed. Hence the seven descending columns of the Solar Cycle can serve as seven temporary little tables for investigating the Solar Cycle of any year. For example, the column over which the letter C is written will be the temporary table

[Margin: *Tabellæ temporariæ Cycli Solaris*. — "The temporary tables of the Solar Cycle."]

[Table: The hundred expanded years, with the seven descending Solar-Cycle columns A–G (printed pp. 364–365; begins here, continues on p. 365).]

Left panel — Centum anni expansi ("The hundred expanded years"):

(i)	(ii)	(iii)	(iv)
1	29	57	85
2	30	58	86
3	31	59	87
4	32	60	88

Right panel — Solar-Cycle columns:

A	B	C	D	E	F	G
10	26	14	2	18	6	22
11	27	15	3	19	7	23
12	28	16	4	20	8	24
13	1	17	5	21	9	25

[Caput XX, concluded]

[Table continued from p. 364: The hundred expanded years and the Solar-Cycle columns A–G.]

Left panel — Centum anni expansi (continued):

(i)	(ii)	(iii)	(iv)
5	33	61	89

(i)	(ii)	(iii)	(iv)
6	34	62	90
7	35	63	91
8	36	64	92
9	37	65	93
10	38	66	94
11	39	67	95
12	40	68	96
13	41	69	97
14	42	70	98
15	43	71	99
16	44	72	100
17	45	73	(blank)
18	46	74	(blank)
19	47	75	(blank)
20	48	76	(blank)
21	49	77	(blank)
22	50	78	(blank)
23	51	79	(blank)
24	52	80	(blank)
25	53	81	(blank)
26	54	82	(blank)
27	55	83	(blank)
28	56	84	(blank)

Right panel — Solar-Cycle columns A–G (continued):

A	B	C	D	E	F	G
14	2	18	6	22	10	26
15	3	19	7	23	11	27
16	4	20	8	24	12	28
17	5	21	9	25	13	1
18	6	22	10	26	14	2

A	B	C	D	E	F	G
19	7	23	11	27	15	3
20	8	24	12	28	16	4
21	9	25	13	1	17	5
22	10	26	14	2	18	6
23	11	27	15	3	19	7
24	12	28	16	4	20	8
25	13	1	17	5	21	9
26	14	2	18	6	22	10
27	15	3	19	7	23	11
28	16	4	20	8	24	12
1	17	5	21	9	25	13
2	18	6	22	10	26	14
3	19	7	23	11	27	15
4	20	8	24	12	28	16
5	21	9	25	13	1	17
6	22	10	26	14	2	18
7	23	11	27	15	3	19
8	24	12	28	16	4	20
9	25	13	1	17	5	21

for the year 1600, to which in the upper table the same letter C answers, and holds good up to the year 1700 — provided, however, that the expanded years written to the left of the adjoining table are brought into use together with it, and so on, as was said in Chapter 12, Number 4, concerning the temporary tables of the Golden Number. Let it be required, then, to find the Solar Cycle of the year 1600. Since this is a hundred-year, the Solar Cycle 13 will answer to it in the upper table. But if the Solar Cycle be sought for the year 1687: since in the upper table the letter C answers to the hundred-year 1600 most recently elapsed, we shall find, in the row of letter C of the adjoining table, opposite the expanded year 87, the Solar Cycle 16. And so with the rest.

CAPUT XXI.

The Finding of the Dominical Letter.

In the preceding chapter we said that the Solar Cycle of 28 years is likewise a cycle of the Dominical letters, because after 28 years these recur in exactly the same order. For since there are seven Dominical letters, on account of the seven days of the week, and since the year of 365 days contains 52 weeks and one day over, it comes about that when the seven letters have been set out in the Calendar — beginning from A on the first day of January, and repeated the same fifty-two times over — the same letter A is repeated on the last day of December.

Consequently, if in some year, for example, the first day is a Sunday, the last day too will be a Sunday, and therefore the first day of the following year will be a Monday. So the letter A, which in the first year was the Dominical letter, marks Monday in the second year; and accordingly the Dominical letter must then be changed. For the same reason it must be changed in the years that follow. The change of the Dominical letters therefore takes place every year, as you see, because of the letter A, which — assigned to the first day of the year — is repeated on the last day of the year. But if there were no day left over beyond the 52 weeks, the letter A would not be repeated, and the first day of the year would again be a Sunday. And if a day were not intercalated every fourth year, the seven Dominical letters would return in the same order after 7 years, and each letter would be Dominical once in the span of 7 years. But since in every fourth year one day is added, and the year becomes a leap year [bissextilis] — in which two Dominical letters are taken up — it follows that the letters cannot return in the same proportion before 28 years have run out. For within this span of years each of the letters is used, together with the one immediately preceding it, in a leap year; and this can happen in seven ways, namely: G with F; F with E; E with D; D with C; C with B; B with A; and A with G. Likewise any letter can be Dominical in the first year after the leap year, then in the second, and lastly in the third — as will appear below in each of the seven cycles of the 28 Dominical letters. And this number of 28 years is produced from the multiplication of 7 by 4, since the letters are seven, and every fourth [year...]

in that year too two of them are in use. For since these numbers, 7 and 4, are prime to one another, the number 28 that is generated from them will show in how many ways the seven letters can be varied among themselves.

[Margin: Construction of the table for finding the Dominical Letter.]

2. Moreover, the Dominical Letter of any given year — leaving aside the rules handed down in Canon 4 of the perpetual Gregorian Calendar — will be found with almost no trouble from the following table, which is constructed as follows. In seven cells let all the centesimal years be written, beginning from the year 1600, but in such a way that the bissextile centesimal years are placed in the same cells as the non-bissextile centesimal years that immediately precede them. This is because in the bissextile centesimal years no interruption of the cycle of Dominical Letters occurs, but only in the non-bissextile ones; and for this same reason the year 1582 has been entered in the same cell as the bissextile year 1600, after the removal of the 10 days that was carried out in the year of the correction. To these seven cells let seven capital index letters be assigned at the top. Next, in turn, let there be built up seven descending columns of the 28 Dominical Letters, which advance in their natural order, ascending from the lowest cells to the topmost, yet so that the first begins with the letter d, the second with e, the third with f, the fourth with g, the fifth with A, the sixth with b, and the seventh with c — taking careful note that at every fourth place two letters are set together in the same cell, on account of the bissextile years. And over these seven columns of Dominical Letters let there be placed the same seven capital index letters that we set above the centesimal years. Finally, to the right of the said columns let all 28 Solar Cycles be written out, as you see done in the table. Those centesimal years that precede the year of the correction, 1582, have not, however, been included among the centesimal years, because before the correction the Dominical Letter of any year is found by the Solar Cycle alone, without the aid of the centesimal years, as we shall explain.

[The "A B" register marks stand in the lower outer margin, set between short rules; they are press/sheet register marks rather than a gathering signature.]

Table of Centesimal Years (*Anni centesimi*) — Source: PDF p. 383 (printed 367)

The seven capital index letters A–G head the columns; each cell holds the centesimal years assigned to that index letter, the bissextile centesimal year (divisible by 400) stacked with the non-bissextile centesimal immediately preceding it.

A	B	C	D	E	F	G
158216	1700	1800	190020	2100	2200	23002400

A	B	C	D	E	F	G
00			00			
2500	2600	270028 00	2900	3000	310032 00	3300
3400	350036 00	3700	3800	390040 00	4100	4200
430044 00	4500	4600	470048 00	4900	5000	51005200
5300	5400	550056 00	5700	5800	590060 00	6100
6200	630064 00	6500	6600	670068 00	6900	7000
710072 00	7300	7400	750076 00	7700	7800	79008000
8100	8200	830084 00	8500	8600	870088 00	8900
9000	910092 00	9300	9400	950096 00	9700	9800
990010 000	10100	10200	103001 0400	10500	10600	1070010800
10900	11000	111001 1200	11300	11400	115001 1600	11700
11800	119001 2000	12100	12200	123001 2400	12500	12600
127001 2800	12900	13000	131001 3200	13300	13400	1350013600
13700	13800	139001 4000	14100	14200	143001 4400	14500
14600	147001 4800	14900	15000	151001 5200	15300	15400
155001 5600	15700	15800	159001 6000	16100	16200	Et sic in infinitū. [And so on to infinity.]

Table of Dominical Letters (*LITERÆ Dominicales*) — Source: PDF p. 384 (printed 368)

The seven capital index letters A–G head the columns; the rightmost column is the *Cyclus Solaris* (Solar Cycle), numbered 1–28. Bissextile years (cycles 1, 5, 9, 13, 17, 21, 25) carry two letters, printed side by side; all other years carry a single letter. A is set as a capital throughout (the sole capital in the seven-letter series); the remaining letters b, c, d, e, f, g are lower-case.

Cyclus Solaris	A	B	C	D	E	F	G
1	b c	c d	d e	e f	f g	g A	A b
2	A	b	c	d	e	f	g
3	g	A	b	c	d	e	f
4	f	g	A	b	c	d	e
5	d e	e f	f g	g A	A b	b c	c d
6	c	d	e	f	g	A	b
7	b	c	d	e	f	g	A
8	A	b	c	d	e	f	g
9	f g	g A	A b	b c	c d	d e	e f
10	e	f	g	A	b	c	d
11	d	e	f	g	A	b	c
12	c	d	e	f	g	A	b
13	A b	b c	c d	d e	e f	f g	g A
14	g	A	b	c	d	e	f
15	f	g	A	b	c	d	e
16	e	f	g	A	b	c	d
17	c d	d e	e f	f g	g A	A b	b c
18	b	c	d	e	f	g	A
19	A	b	c	d	e	f	g
20	g	A	b	c	d	e	f
21	e f	f g	g A	A b	b c	c d	d e
22	d	e	f	g	A	b	c
23	c	d	e	f	g	A	b
24	b	c	d	e	f	g	A

Cyclus Solaris	A	B	C	D	E	F	G
25	g A	A b	b c	c d	d e	e f	f g
26	f	g	A	b	c	d	e
27	e	f	g	A	b	c	d
28	d	e	f	g	A	b	c

CAPVT XXI. (369)

(Continuation of Caput XXI, [Inuentio Literæ Dominicalis] — the Usus, use of the table.)

When, therefore, you wish to find the Dominical letter of any year after the correction of the Calendar, first look up, by means of the preceding chapter, the Solar Cycle of that year. For at once, in the following table of Dominical letters, opposite that Solar Cycle and under the capital letter placed at the head of the table which corresponds to the century that contains the proposed year, you will find the Dominical letter you are seeking. If this turns out to be double, the year is bissextile [leap]; but if single, it is a common year. And since in the non-bissextile centesimal years a double letter likewise occurs, only one is to be taken — namely the one set to the left, which comes earlier in the series of the seven letters A, B, C, D, E, F, G — with G reckoned, in this operation, as preceding A; for once the cycle of these seven letters has been completed, after G one returns to A, just as B follows A, and so on.

For example: in the year 1674 the Solar Cycle is 3. Opposite it, in the following table, under the letter A placed at the head — the A, that is, written above the year 1600 — is found the Dominical letter G, single, and so this year is a common one. In the year 1892, however, the Solar Cycle is 25, which yields the Dominical letters b, c, and therefore that year is bissextile. But in the year 1700 the Solar Cycle is 1, which points to the letters c, d; and because this centesimal year passes without a bissextile day, C alone will be the Dominical letter. So too in the year 2000 the Solar Cycle will be 21, and the Dominical letters d, e, since that year is bissextile. The same procedure is to be observed for the remaining years after the correction.

For the years before the emendation of the Calendar, the Solar Cycle will indicate the Dominical letter under the capital letter E. Thus, since in the year 1582 the Solar Cycle was 23, you will find under the letter E the Dominical letter g, which marked the Lord's Day in that year up to the fourth of October; for from that

point to the end of the year the Dominical letter was C. Likewise, in the year 325 the Solar Cycle was 26, and the Dominical letter c. Finally, in the year 1100 the Solar Cycle was 17, and the Dominical letters g, A. And so for the rest. In bissextile years the letter that stands later in the alphabet, or series of letters, will be Dominical up to the feast of St. Matthias, and the other from there to the end of the year.

[Margin: Temporary tables of Dominical letters.]

From this, anyone may easily extract temporary little tables of Dominical letters, by which the Dominical letter may be found for any century. For the seven rows of Dominical letters descending in the following table will be seven such temporary tables. For example, the first row, under the letter A, will serve as a temporary table from the year 1600 (which among the centesimal years is placed under that same letter A) up to the year 1700, and again from the year 2500 to the year 2600, and so on. The row under the letter E, however, will be a temporary table from the first year of Christ up to the year 1582, in which the Calendar was emended.

[Margin: An easier way of finding the Dominical letter, without the Solar Cycle.]

3. But we shall find the Dominical letter of any year far more expeditiously, without the Solar Cycle, from the following table, which is constructed thus. In the first place, let all the centesimal years be written out, beginning with the year 0, yet in such a way that, when the year 1500 before the correction has been written, two empty cells are left after it, in which these words are to be noted, *Post correctionem* [after the correction]; and in the fifth cell the same year 1500 is written again, and in the sixth the year 1600. Then, leaving the seventh cell empty, the year 1700 is written in the first cell of the next transverse row. Likewise, omitting the second cell, in the third is placed the year 1800; and in the fifth — the fourth being passed over — the year 1900 is written; and, leaving the seventh cell, the year 2100 is placed in the first cell of the next row. And so on without end, the remaining centesimal years that follow are to be written, always omitting the empty cells — the second, the fourth, and the seventh. Then at the head are set the seven capital letters, the indices of the Dominical letters. Finally, beneath the centesimal years the Dominical letters are written, as you see done in the table.

After this, let the seven rows of the seven Dominical letters be written out, so that each in turn occupies the first place, beginning with the letter b, which was

Dominical in the first year of Christ, and the rest proceeding across in retrograde order. To these rows, on the left, are attached those same seven capital letters which we said above were to be written above the centesimal years, as you see in the other table; and beneath these seven rows, at last, are placed the hundred expanded years.

[370] CALEND. GREGOR.

Table. *Anni Centesimi* [Centesimal Years]. Seven columns headed by the capital index letters A–G. The pre-correction centuries fill all seven columns down to the year 1500; the two cells after 1500 (columns C and D of that row) carry the note *Post correctionē* [i.e. *Post correctionem*, "after the correction"], spanning the two cells. From the correction onward the years occupy only columns A, C, E, and F (the second, fourth, and seventh cells of each row being left empty), continuing to 13200 &c. The bottom row gives the pair of Dominical letters belonging to each column.

[Vertical stub label at left: ANNI CENTESIMI.]

A	B	C	D	E	F	G
0	100	200	300	400	500	600
700	800	900	1000	1100	1200	1300
1400	1500	Post correctionē		1500	1600	
1700		1800		1900	2000	
2100		2200		2300	2400	
2500		2600		2700	2800	
2900		3000		3100	3200	
3300		3400		3500	3600	
3700		3800		3900	4000	
4100		4200		4300	4400	
4500		4600		4700	4800	
4900		5000		5100	5200	
5300		5400		5500	5600	
5700		5800		5900	6000	
6100		6200		6300	6400	
6500		6600		6700	6800	

A	B	C	D	E	F	G
6900		7000		7100	7200	
7300		7400		7500	7600	
7700		7800		7900	8000	
8100		8200		8300	8400	
8500		8600		8700	8800	
8900		9000		9100	9200	
9300		9400		9500	9600	
9700		9800		9900	10000	
10100		10200		10300	10400	
10500		10600		10700	10800	
10900		11000		11100	11200	
11300		11400		11500	11600	
11700		11800		11900	12000	
12100		12200		12300	12400	
12500		12600		12700	12800	
12900		13000		13100	13200 &c.	
d c	e d	f e	g f	A g	b A	c b

**

CAPVT XXI. (371)

Table. *Literæ Dominicales* [Dominical Letters]. A 7×7 shift grid: the leftmost column (headed *Indices Literæ*, "Index letters") lists the capital index letters A–G; each row gives the seven Dominical letters in cyclic retrograde order.

Indices Literæ

A	b	A	g	f	e	d	c
B	c	b	A	g	f	e	d
C	d	c	b	A	g	f	e
D	e	d	c	b	A	g	f
E	f	e	d	c	b	A	g
F	g	f	e	d	c	b	A

Indices Literæ

G	A	g	f	e	d	c	b

Table. *Anni expansi* [Expanded Years]. Seven columns of the years 1–100 distributed to match the seven index letters; doubled values within a column mark the bissextile-year skips of the Dominical-letter cycle.

[Vertical stub label at left: *Anni expansi*.]

1	2	3	4	4	5	6
7	8	8	9	10	11	12
12	13	14	15	16	16	17
18	19	20	20	21	22	23
24	24	25	26	27	28	28
29	30	31	32	32	33	34
35	36	36	37	38	39	40
40	41	42	43	44	44	45
46	47	48	48	49	50	51
52	52	53	54	55	56	56
57	58	59	60	60	61	62
63	64	64	65	66	67	68
68	69	70	71	72	72	73
74	75	76	76	77	78	79
80	80	81	82	83	84	84
85	86	87	88	88	89	90
91	92	92	93	94	95	96
96	97	98	99	100	100	

**

To find the Dominical letter, then, proceed with this table as follows. If the year in question is one of the centurial years, look for it among the centurial years listed. Beneath it you will find a pair of letters, which will be the Dominical letters for that year — provided that centurial year is bissextile, as all centurial years before the restoration are, and, after the correction, only those set out in the sixth cell beneath the index letter F, namely 1600, 2000, 2400, and so on. But if the given centurial year is a common year — as, after the emendation of the year, are all

those outside the sixth cell — then of the two letters only one will be Dominical, namely the one placed on the right, which stands earlier in the alphabet. If, however, the year in question is not a centurial year, you will find its Dominical letter above the expanded year [annum expansum], in that row of Dominical letters which has prefixed to it the same index letter that stands above the centurial year most recently elapsed before the expanded year. And if the expanded year is doubled, that year is bissextile, and two Dominical letters answer to it: the one that occurs first serves up to the feast of St. Matthias, the other from that day to the end of the year.

For example: in the year 300 from the birth of Christ the Dominical letters were g, f, which are placed beneath the index letter D and the year 300. But in the year 325 the Dominical letter was C, above the expanded year 25, in the row of the index letter D — that is, the row written above the year 300, the centurial year most recently elapsed. Likewise in the year 1582, before the correction, the Dominical letter was g, above the expanded year 82, in the row of the index letter B, which is written above the year 1500 before the correction. But after the correction the same year had the Dominical letter C, above the same expanded year 82, in the row of the index letter E, since this same index letter is placed above the year 1500 after the correction. Again, in the year 1100 the Dominical letters were A, g. Likewise in the year 1674 you will find the Dominical letter g, above the expanded year 74, in the row of the index letter F, since this letter is found above the year 1600. In the year 1892, above the doubled expanded year 92, you will find the letters c, b, in the row of the index letter C, written above the year 1800 — and therefore that year is bissextile. But in the year 1700 the Dominical letter will be c, beneath the year 1700, the letter d being set aside. Finally, in the year 2000 the Dominical letters will be b, A. And so for the rest.

If the Dominical letters for the years near Christ's birth are sought by the aforesaid rules, the letters that emerge are those which would have obtained had the institution of Julius Caesar been preserved. But because the priests of the idols erred in the intercalation — an error that Augustus afterwards corrected — the Dominical letters actually in use down to the fourth year of the Lord were different. The following tables display the discrepancy.

[Margin: In the first 4 years of Christ the Dominical letters prescribed by the Calendar differ from those which were actually in use at that time.]

Dominical Letters according to the Correction of Augustus [*Literæ Dominicales secundum correctionem Augusti*]

Anni Domini	0	1	2	3	4	5	6	7	8
Literæ Dominicales	B	A	G	F	E	D	C	B	A G

Dominical Letters according to the Institution of Julius Caesar and the Rules of the Calendar [*Literæ Dominicales secundum institutionem Iulij Cæsaris, & regulas Calendarij*]

Anni Domini	0	1	2	3	4	5	6	7	8
Literæ Dominicales	D C	B	A	G	F E	D	C	B	A G

And so the Dominical letters, following the prescription of the Calendar from the Nativity of Christ — that is, from year 0 up to and including year 4 — differ from those which the correction of Augustus Caesar gave; but after year 4 no further discrepancy occurs.

- Nor does it seem right to pass over here that, from our equation of the solar year — which makes three successive centurial years common, without an intercalary day, while every fourth centurial year remains bissextile — a cycle of 400 years is formed, such that once that span is completed, all interruption of the Dominical letters ceases and they recur in exactly the same order, as is plain from the following table. By means of this cycle, therefore, the Dominical letter after the correction of the year is derived from the following table more quickly than can be told (for before the correction a cycle of 28 years was enough), in this way. First, one must ask in which year of this cycle the proposed year falls. Once that is found, you will have opposite it the Dominical letter — either single or double, according as the proposed year is common or bissextile.

[Margin: The 400-year cycle of Dominical letters after the correction. — Finding the Dominical letter from the 400-year cycle.]

The 400-year Cycle of Dominical Letters (single letter = common year; doubled pair = bissextile year, the first letter serving to the feast of St. Matthias, the second thereafter). The table runs continuously across three leaves: cycles 1–12 here, 13–180 on the next leaf, 181–348 on the following leaf, and it continues beyond 348 on the next leaf.

Cycles 1–12 (foot of printed p. 372):

Cyclus	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
1	g	5	b	9	d

Cyclus	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
2	f	6	A	10	c
3	e	7	g	11	b
4	d c	8	f e	12	A g

Cycles 13–180 (printed p. 373):

Cyclus	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
13	f	69	f	125	g
14	e	70	e	126	f
15	d	71	d	127	e
16	c b	72	c b	128	d c
17	A	73	A	129	b
18	g	74	g	130	A
19	f	75	f	131	g
20	e d	76	e d	132	f e
21	c	77	c	133	d
22	b	78	b	134	c
23	A	79	A	135	b
24	g f	80	g f	136	A g
25	e	81	e	137	f
26	d	82	d	138	e
27	c	83	c	139	d
28	b A	84	b A	140	c b
29	g	85	g	141	A
30	f	86	f	142	g
31	e	77 [recte: 87]	e	143	f
32	d c	88	d c	144	e d
33	b	89	b	145	c
34	A	90	A	146	b
35	g	91	g	147	A
36	f e	92	f e	148	g f

Cyclu s	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
37	d	93	d	149	e
38	c	94	c	150	d
39	b	95	b	151	c
40	A g	96	A g	152	b A
41	f	97	f	153	g
42	e	98	e	154	f
43	d	99	d	155	e
44	c b	100 †	c	256 [recte: 156]	d c
45	A	101	b	157	b
46	g	102	A	158	A
47	f	103	g	159	g
48	e d	104	f e	160	f e
49	c	105	d	161	d
50	b	106	c	162	c
51	A	107	b	163	b
52	g f	108	A g	164	A g
53	e	109	f	165	f
54	d	110	e	166	e
55	c	111	d	167	d
56	b A	112	c b	168	c b
57	g	113	A	169	A
58	f	114	g	170	g
59	e	115	f	171	f
60	d c	116	e d	172	e d
61	b	117	c	173	c
62	A	118	b	174	b
63	g	119	A	175	A
64	f e	120	g f	176	g f
65	d	121	e	177	e
66	c	122	d	178	d

Cyclu s	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
67	b	123	c	179	c
68	A g	124	b A	180	b A

Cycles 181–348 (printed p. 374):

Cyclus	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
181	g	237	A	293	A
182	f	238	g	294	g
183	e	239	f	295	f
184	d c	240	e d	296	e d
185	b	241	c	297	c
186	A	242	b	298	b
187	g	243	A	299	A
188	f e	244	g f	300	g
189	d	245	e	301	f
190	c	246	d	302	e
191	b	247	c	303	d
192	A g	248	b A	304	c b
193	f	249	g	305	A
194	e	250	f	306	g
195	d	251	e	307	f
196	c b	252	d c	308	e d
197	A	253	b	309	c
198	g	254	A	310	b
199	f	255	g	311	A
200	e	256	f e	312	g f
201	d	257	d	313	e
202	c	258	c	314	d
203	b	259	b	315	c
204	A g	260	A g	316	b A
205	f	261	f	317	g

Cyclus	Lit. Dom.	Cyclus	Lit. Dom.	Cyclus	Lit. Dom.
206	e	262	e	318	f
207	d	263	d	319	e
208	c b	264	c b	320	d c
209	A	265	A	321	b
210	g	266	g	322	A
211	f	267	f	323	g
212	e d	268	e d	324	f e
213	c	269	c	325	d
214	b	270	b	326	c
215	A	271	A	327	b
216	g f	272	g f	328	A g
217	e	273	e	329	f
218	d	274	d	330	e
219	c	275	c	331	d
220	b A	276	b A	332	c b
221	g	277	g	333	A
222	f	278	f	334	g
223	e	279	e	335	f
224	d c	280	d c	336	e d
225	b	281	b	337	c
226	A	282	A	338	b
227	g	283	g	339	A
228	f e	284	f e	340	g f
229	d	285	d	341	e
230	c	286	c	342	d
231	b	287	b	343	c
232	A g	288	A g	344	b A
233	f	289	f	345	g
234	e	290	e	346	f
235	d	291	d	347	e
236	c b	292	c b	348	d c

Chapter XXI (continued) — the Four-Hundred-Year Table of Dominical Letters; Chapter XXII

[Printed folio 375 — running header "CAPVT XXI." / "375"]

The great table of Dominical letters for the 400-year cycle concludes here. It is printed as three side-by-side panels (Cycl^{us} | Lit. Dom.), read left → middle → right; the columns are flattened below into one six-column table. Bissextile years (cycle ÷ 4) carry a doubled letter-pair; centurial year 400 carries a dagger (†) marking it as a centurial year and remains bissextile.

Cycl ^{us}	Lit. Dom.	Cycl ^{us}	Lit. Dom.	Cycl ^{us}	Lit. Dom.
349	b	367	A	385	f
350	A	368	g f	386	e
351	g	369	e	387	d
352	f e	370	d	388	c b
353	d	371	c	389	A
354	c	372	b A	390	g
355	b	373	g	391	f
356	A g	374	f	392	e d
357	f	375	e	393	c
358	e	376	d c	394	b
359	d	377	b	395	A
360	c b	378	A	396	g f
361	A	379	g	397	e
362	g	380	f e	398	d
363	f	381	d	399	c
364	e d	382	c	† 400	b A
365	c	383	b		
366	b	384	A g		

This is how you will find out which year of this Cycle a given year is. From the year in question, cast out all the ten-thousands and all the two-thousands, if they can be cast out, and from the remainder cast out 400 as many times as possible — which is not difficult, since this remaining number cannot be greater than 1999,

so that 400 can be contained in it at most four times. The number then left over will indicate the year of this Cycle. But if, after casting out the 400's, nothing remains, the proposed year will be the four-hundredth — that is, the last of the whole Cycle.

For example, take the year 34689. Casting out all the ten-thousands and all the two-thousands, 689 remains; and from this, if 400 is cast out once, 289 remains. Therefore the given year is the two-hundred-and-eighty-ninth of this 400-year Cycle, and its Dominical letter will be f, the first after the bissextile. Again, given the year 11500: setting aside 10000, if from the remaining 1500 we cast out 400 three times, the year 300 of this Cycle is left. Its Dominical letter will be g, single, since the given hundredth year is not bissextile but common. Thus the year 1600 will be the four-hundredth [of the Cycle], presenting the double Dominical letter b, A, since it is bissextile. Finally, the year 1582 is the 382nd in the Cycle, having the Dominical letter c. And so with the rest.

[Margin: A very easy way to find the year within the 400-year cycle.]

Perhaps, however, we shall find out more easily and quickly which year of this 400-year Cycle any proposed year is, by the following method. Take any proposed year written out in its digits, and consider only the number formed by the two figures occupying the fourth and third places — that is, the ones that stand for thousands and hundreds only — leaving aside the ten-thousands, twenty-thousands, and larger figures, together with the trailing years [the tens and units]. This number will never be greater than 99. For if from this number 20 is cast out as many times as possible, then from the remainder [the same is done], the number left over will indicate the hundred-mark year of this Cycle; and if the trailing years are added to it, should there be any, the full year of that same Cycle will be obtained. But if there are no trailing years, there will remain only the first, second, or third hundred-year of the Cycle [i.e. the 100th, 200th, or 300th]. And if there are neither trailing years, nor thousands, nor hundreds, or if after casting out 20 and 4 from the thousands and hundreds nothing is left, the proposed year will be the four-hundredth of the Cycle, that is, the last.

For example, if the year 37090 is given, only the number 70 need be observed, since the figure 7 occupies the place of thousands and the figure 0 the place of hundreds. From this, if all the 20's are cast out, 10 remain; and when the 4's are cast out, 2 remain. That year, therefore, is the two-hundred-and-ninetieth in this 400-year Cycle. But if the year 37000 is given, you will say it is the two-hundredth, since there are no trailing years. Thus you will call the year 56800 the four-hundredth, because nothing remains when all the 20's and 4's are cast out of the

number 68. In the same way you will judge the year 6790000 to be the four-hundredth. But the year 560001 you will call the first. And so with the rest.

CHAPTER XXII.

The Finding of the Movable Feasts.

The principal movable feasts in the Catholic Church are Septuagesima, Quadragesima (or Ash Wednesday), Easter, the Lord's Ascension, Pentecost, Corpus Christi, and the First Sunday of Advent. To these, in the tables of movable feasts, is also added the number of Sundays between Pentecost and the Lord's Advent, as being necessary for those who recite the Divine Office, so that they may know how many of the Sundays that are placed after Epiphany are to be inserted between the 23rd and 24th Sundays after Pentecost. But since, in the perpetual Gregorian Calendar which we set forth at the beginning of this work, we have dealt quite fully — in Canon 6 — with the find-

[Margin: Which are the movable feasts.]

[Printed folio 376 — running header "376" / "CALEND. GREGOR."]

-ing of these movable festivals, having proposed two general tables very useful for the purpose (one old, the other new), we shall not repeat here what we wrote there. We shall present only the former table, resolved into common and bissextile years in another way — doubled, that is — so that the movable feasts may be found without any trouble, whether in common or in bissextile years; and this resolved table is the one the Eastern Church has been accustomed to use.

[Margin: Construction of the key to the resolved table of the movable feasts.]

And because it had been fitted to Dionysius's great Cycle of 532 years — a number produced by multiplying the Cycle of the golden number, of 19 years, by the Solar Cycle of 28 years — whereas this Cycle can no longer be of use, on account of the interruption of the Dominical letters in the non-bissextile centurial years, we were obliged to arrange its key differently: in the way, that is, that is seen in the following small table, which precedes the resolved table. But if anyone wishes to understand by what art the aforesaid key was constructed, we shall explain it with two examples, the first of which concerns a common year, the second a bissextile one.

Let us suppose, for example, that in some common year the Epact is xvij (18) and the Dominical letter d. On this assumption, in the old Paschal table as reformed in the Gregorian Calendar, Septuagesima is found on 25 January. Now since, in our resolved table, the line that puts Septuagesima (in a common year, which the letter c indicates) on 25 January has the number 15 prefixed to it, this number 15 must be written in the common angle of Epact xvij (18) and Dominical letter d. Again, if we suppose that in some bissextile year the Epact is the same, xvij (18), and the Dominical letters e, d, we shall find in the same Paschal table that Septuagesima falls on 26 January. Since, then, in our resolved table the number 16 is prefixed on the left to the line that indicates Septuagesima on 26 January in a bissextile year (which the letter b denotes), this number 16 must be placed in the common angle of Epact xvij (18) and the Dominical letters e, d. And the same reasoning holds for the rest. But if on the right side, opposite the Epacts, you write in the corresponding golden numbers as they are placed in the old Paschal table as reformed — namely golden number 14 opposite Epact 1 [j], and golden number 6 opposite Epact iij (3), and so on — this same key will also serve for the times before the correction of the Calendar, as we shall say presently.

[Margin: Finding the movable feasts from the resolved table.]

2. Therefore, if in the key we take the number in the common angle of the Epact and the Dominical letter — whether single or double, according as the year is common or bissextile — you will find, after the correction, opposite that number in the resolved table all the movable feasts of the year in which that Epact and Dominical letter are in use. And if in place of the Epact you take the golden number of some year before the correction, together with the Dominical letter, the number found in the common angle will likewise present, in the same resolved table, all the movable feasts. For example: in the year 1602 the Epact is vij (7) and the Dominical letter f. In their common angle I find the number 33; opposite this I find Septuagesima on 3 February, Ash Wednesday on 20 February, Easter on 7 April, the Lord's Ascension on 16 May, Pentecost on 26 May, Corpus Christi on 6 June, the Sundays after Pentecost 26, and the First Sunday of Advent on 1 December. Again, in the year 1620 the Epact is xxvj (26) and the Dominical letters e, d. In their common angle the number 58 is found, opposite which, in the resolved table, all the movable feasts are displayed. Finally, in the year 1582, before the correction, the golden number was 6 and the Dominical letter g. The number 49, therefore, found in their common angle, will show in the resolved table on what days the movable feasts were celebrated. And so with the rest.

Epactæ	A	b	c	d	e	f	g	A	fg	ef	e	d	c	b	A	A. N.
∗	5	5	5	5	5	4	4	5	4	6	5	5	5	5	5	3
	1	3	5	7	9	7	9	0	8	0	8	6	4	2		
xxix	5	5	5	5	5	6	4	5	6	6	5	5	5	5	5	—
	1	3	5	7	9	1	9	0	2	0	8	6	4	2		
xxviii	5	5	5	5	5	6	6	6	6	6	5	5	5	5	5	11
	1	3	5	7	9	1	3	4	2	0	8	6	4	2		
xxvii	6	5	5	5	5	6	6	6	6	6	5	5	5	5	6	—
	5	3	5	7	9	1	3	4	2	0	8	6	4	6		
xxvi	6	6	5	5	5	6	6	6	6	6	5	5	6	6	6	19
	5	7	5	7	9	1	3	4	2	0	8	6	8	6		
xxv	6	6	6	5	5	6	6	6	6	6	5	7	6	6	6	8
	5	7	9	7	9	1	3	4	2	0	8	0	8	6		
xxiiii	9	1	1	1	3	5	7	8	6	4	2	1	1	1	1	16
		1	3									4	2	0		
xxiii	9	1	1	1	3	5	7	8	6	4	1	1	1	1	1	5
		1	3	5							6	4	2	0		
xxii	9	1	1	1	1	5	7	8	6	1	1	1	1	1	1	—
		1	3	5	7					8	6	4	2	0		
xxi	9	1	1	1	1	1	7	8	2	1	1	1	1	1	1	13
		1	3	5	7	9			0	8	6	4	2	0		
xx	9	1	1	1	1	1	2	2	2	1	1	1	1	1	1	2
		1	3	5	7	9	1	2	0	8	6	4	2	0		

Epactæ	A	b	c	d	e	f	g	g A	fg	ef	d e	c d	b c	A b	A. N.
xviiij	2	1	1	1	1	1	2	2	2	1	1	1	1	2	—
	3	1	3	5	7	9	1	2	0	8	6	4	2	4	
xviij	2	2	1	1	1	1	2	2	2	1	1	1	2	2	10
	3	5	3	5	7	9	1	2	0	8	6	4	6	4	
xvj	2	2	2	1	1	1	2	2	2	1	1	2	2	2	—
	3	5	7	5	7	9	1	2	0	8	6	8	6	4	
xv	2	2	2	2	1	1	2	2	2	1	3	2	2	2	18
	3	5	7	9	7	9	1	2	0	8	0	8	6	4	
xiiiij	2	2	2	2	3	1	2	2	2	3	3	2	2	2	7
	3	5	7	9	1	9	1	2	0	2	0	8	6	4	
xiiij	2	2	2	2	3	3	2	2	3	3	3	2	2	2	—
	3	5	7	9	1	3	1	2	4	2	0	8	6	4	
xij	2	2	2	2	3	3	3	3	3	3	3	2	2	2	15
	3	5	7	9	1	3	5	6	4	2	0	8	6	4	
xj	3	2	2	2	3	3	3	3	3	3	3	2	2	3	4
	7	5	7	9	1	3	5	6	4	2	0	8	6	8	
x	3	3	2	2	3	3	3	3	3	3	3	2	4	3	—
	7	9	7	9	1	3	5	6	4	2	0	8	0	8	
ix	3	3	4	2	3	3	3	3	3	3	3	4	4	3	12
	7	9	1	9	1	3	5	6	4	2	0	2	0	8	
viiij	3	3	4	4	3	3	3	3	3	3	4	4	4	3	1
	7	9	1	3	1	3	5	6	4	2	4	2	0	8	
vij	3	3	4	4	4	3	3	3	3	4	4	4	4	3	—
	7	9	1	3	5	3	5	6	4	6	4	2	0	8	
vj	3	3	4	4	4	4	3	3	4	4	4	4	4	3	9
	7	9	1	3	5	7	5	6	8	6	4	2	0	8	
v	3	3	4	4	4	4	4	5	4	4	4	4	4	3	—
	7	9	1	3	5	7	9	0	8	6	4	2	0	8	
iiiij	5	3	4	4	4	4	4	5	4	4	4	4	4	5	17
	1	9	1	3	5	7	9	0	8	6	4	2	0	2	
iiij	5	5	4	4	4	4	4	5	4	4	4	4	5	5	6
	1	3	1	3	5	7	9	0	8	6	4	2	4	2	
ij	5	5	5	4	4	4	4	5	4	4	4	5	5	5	—

Epactæ								g		d		c	b	A	A. N.
	A	b	c	d	e	f	g	A	fg	ef	e	d	c	b	
	1	3	5	3	5	7	9	0	8	6	4	6	4	2	
j	5	5	5	5	4	4	4	5	4	4	5	5	5	5	14
	1	3	5	7	5	7	9	0	8	6	8	6	4	2	

[Margin: at the Epact **xxvj** row, the Arabic figure **25**; at the Epact **xxiiij** row, the Roman **xxv** — the two marks flag the special handling of Epact 25 (Arabic 25, used for golden numbers 12–19, follows the 26/xxvj line; Roman xxv, used for golden numbers 1–11, follows the 24/xxiiij line).]

Caput XXII — *Festorum mobilium inventio* (continued)

Table of the Movable Feasts, Resolved

[TABVLA FESTORVM MOBILIVM RESOLVTA]

This is the *tabula resoluta* of the movable feasts, entered by the *clavis* number (1–58, here shown through 52; it continues on the following leaf). For each key the table gives the year-type letter, then the dates of Septuagesima, Ash Wednesday (Cineres), Easter (Pascha), the Ascension, Pentecost, Corpus Christi, the number of the last Sunday after Pentecost, and the first Sunday of Advent.

The unlabelled second column carries a repeating **c / b**: *c* = *annus communis* (common year), *b* = *annus bissextilis* (leap year). Months are as printed; where no month is repeated, the preceding month continues. "No." = November, "Dec." = December, "Iun." = June, "Maij" = May.

Cl	Ci								
a	c	Septu	ne	Pa	Ascensi	Pent	Corpus		
vi	/	agesi	re	sc	o	ecost	Domin	Dominicæ	Dominica
s	b	ma	s	ha	Domini	e	i	post Pentec.	prima Aduent.
1	c	18 Ian.	4 Fe br.	22 M ar.	30 Apr.	10 Maij	21 Maij	28	29 No.
2	b	19	4	22	30	10	21	28	9
3	c	19	5	23	1 Maij	11	22	28	23

Cl a vi s	c Septu / agesi b ma	Ci ne re s	Pa sc ha	Ascensi o Domini	Pent ecost e	Corpus Domin i	Dominicæ post Pentec.	Dominica prima Aduent.
4	b 20	6	23	1	11	22	28	30
5	c 20	6	24	2	12	23	28	1 Dec.
6	b 21	7	24	2	12	23	28	1
7	c 21	7	25	3	13	24	28	2
8	b 22	8	25	3	13	24	28	2
9	c 22	8	26	4	14	25	28	3
1 0	b 23	9	26	4	14	25	28	3
1 1	c 23	9	27	5	15	26	27	27 No.
1 2	b 24	10	27	5	15	26	27	27
1 3	c 24	10	28	6	16	27	27	28
1 4	b 25	11	28	6	16	27	27	28
1 5	c 25	11	29	7	17	28	27	29
1 6	b 26	12	29	7	17	28	27	29
1 7	c 26	12	30	8	18	29	27	30
1 8	b 27	13	30	8	18	29	27	30
1 9	c 27	13	31	9	19	30	27	1 Dec.
2 0	b 28	14	31	9	19	30	27	1
2 1	c 28	14	1 Ap r.	10	20	31	27	2

Cl a vi s	c Septu / agesi b ma	Ci ne re s	Pa sc ha	Ascensi o Domini	Pent ecost e	Corpus Domin i	Dominicæ post Pentec.	Dominica prima Aduent.
2 2	b 29	15	1	10	20	31	27	2
2 3	c 29	15	2	11	21	1 Iun.	27	3
2 4	b 30	16	2	11	21	1	27	3
2 5	c 30	16	3	12	22	2	26	27 No.
2 6	b 31	17	3	12	22	2	26	27
2 7	c 31	17	4	13	23	3	26	28
2 8	b 1 Feb.	18	4	13	23	3	26	28
2 9	c 1	18	5	14	24	4	26	29
3 0	b 2	19	5	14	24	4	26	29
3 1	c 2	19	6	15	25	5	26	30
3 2	b 3	20	6	15	25	5	26	30
3 3	c 3	20	7	16	26	6	26	1 Dec.
3 4	b 4	21	7	16	26	6	26	1
3 5	c 4	21	8	17	27	7	26	2
3 6	b 5	22	8	17	27	7	26	2

Cl a vi s	c Septu / agesi b ma	Ci ne re s	Pa sc ha	Ascensi o Domini	Pent ecost e	Corpus Domin i	Dominicæ post Pentec.	Dominica prima Aduent.
3 7	c 5	22	9	18	28	8	26	3
3 8	b 6	23	9	18	28	8	26	3
3 9	c 6	23	10	19	29	9	25	27 No.
4 0	b 7	24	10	19	29	9	25	27
4 1	c 7	24	11	20	30	10	25	28
4 2	b 8	25	11	20	30	10	25	28
4 3	c 8	25	12	21	31	11	25	29
4 4	b 9	26	12	21	31	11	25	29
4 5	c 9	26	13	22	1 Iun.	12	25	30
4 6	b 10	27	13	22	1	12	25	30
4 7	c 10	27	14	23	2	13	25	1 Dec.
4 8	b 11	28	14	23	2	13	25	1
4 9	c 11	28	15	24	3	14	25	2
5 0	b 12	29	15	24	3	14	25	2
5 1	c 12	1 M ar.	16	25	4	15	25	3
5	b 13	1	16	25	4	15	25	3

Cl a vi s	c Septu / agesi b ma	Ci ne re s	Pa sc ha	Ascensi o Domini	Pent ecost e	Corpus Domin i	Dominicæ post Pentec.	Dominica prima Aduent.
2								

Remainder of the Table of the Movable Feasts, Resolved

[RESIDVVM TABVLÆ FESTORVM MOBILIVM RESOLVTÆ]

Continuation of the same *tabula resoluta*, keys 53–70.

Cl a vi s	c Septu / agesi b ma	Ci ne re s	Pa sc ha	Ascensi o Domini	Pent ecost e	Corpus Domin i	Dominicæ post Pentec.	Dominica prima Aduent.
5 3	c 13 Feb.	2 M ar.	17 Ap r.	26 Maij	5 Iun.	16 Iun.	24	27 Nou.
5 4	b 14	2	17	26	5	16	24	27
5 5	c 14	3	18	27	6	17	24	28
5 6	b 15	3	18	27	6	17	24	28
5 7	c 15	4	19	28	7	18	24	29
5 8	b 16	4	19	28	7	18	24	29
5 9	c 16	5	20	29	8	19	24	30
6 0	b 17	5	20	29	8	19	24	30
6 1	c 17	6	21	30	9	20	24	1 Dec.
6 2	b 18	6	21	30	9	20	24	1
6	c 18	7	22	31	10	21	24	2

Cl a vi s	c Septu / agesi b ma	Ci ne re s	Pa sc ha	Ascensi o Domini	Pent ecost e	Corpus Domin i	Dominicæ post Pentec.	Dominica prima Aduent.
3								
6	b 19	7	22	31	10	21	24	2
4								
6	c 19	8	23	1 Iun.	11	22	24	3
5								
6	b 20	8	23	1	11	22	24	3
6								
6	c 20	9	24	2	12	23	23	27 Nou.
7								
6	b 21	9	24	2	12	23	23	27
8								
6	c 21	10	25	3	13	24	23	28
9								
7	b 22	10	25	3	13	24	23	28
0								

Now, so that everyone may see more clearly how great a difference there is between the Gregorian Calendar and the old one — and how much more correctly Easter is set for celebration in the former than in the latter — we have computed, in the following table, for every year from 1600 up to the year 5000 (3,401 years in all), the Easters together with the other movable feasts according to the Gregorian Calendar; and likewise the Easters of the old Calendar, together with the number of days by which the Easters of the Gregorian Calendar differ from those celebrated according to the old Calendar. For in this way everyone will plainly recognize that it was absolutely necessary for the Calendar to be corrected, since the Easter of the old year, whenever it differs from the Gregorian, is always celebrated later than was decreed by the Council of Nicaea and the holy Fathers.

In the same table we have also recorded, for each year, the golden number, the Epact, the Dominical letter, the mean full moon reckoned according to the Gregorian correction of the Calendar, the fourteenth Moon of that same [Gregorian Calendar], the fourteenth Moon of the old Calendar, and finally we have added the Indiction of each year as well. Moreover, the number of days by

which the Easters of the two Calendars differ from each other is found as follows: to the day of the old Easter one adds the days that have been dropped from [the reform] up to the year in question, and from the resulting total one subtracts the day of the Gregorian Easter. Thus, since up to the year 1700 exclusive 10 days have been removed, if these are added to 23 March — on which the old Easter is celebrated in the year 1600 — they make the 33rd of March, that is, 2 April; and if from this one takes away 2 April, on which the Gregorian Easter falls in the same year 1600, the difference comes to 0. Again, since up to the year 1880 twelve days will have been removed, if you add them to the old Easter, that is, to 20 April, you will make the 32nd of April, or the 63rd of March; and if from these you subtract the Easter of the new Calendar, that is, 28 March, there will remain a difference between the two Easters of 35 days. And so for the rest.

There follows the table of the Movable Feasts from the year 1600 up to the year 5000.

Table of the Movable Feasts [from the year 1600]

[TABVLA FESTORVM (MOBILIVM)]

This is the opening leaf of the great year-by-year table announced above; it runs here from 1600 to 1655 and continues on the following leaf. Columns: the year of the Lord; the golden number (*Aureus Numerus*); the Epact; the Dominical letter(s) of the Gregorian Calendar (leap years carry two); the mean full moon of the Gregorian Calendar, given as day · hour · month; the fourteenth Moon of the Gregorian Calendar (day · month); Septuagesima; Ash Wednesday (*Dies Cinerum*); Easter of the new Calendar (*Pascha Calendarii novi*); and the Ascension.

In the moon and Easter columns the month is printed as a single letter: **M** = **Martij (March)**, **A** = **Aprilis (April)**. In the Septuagesima and Ash-Wednesday columns the months are "Ian./Feb./Mar."; the Ascension is in "Maij" (May), or "Iunij" (June) where marked.

An ni	Au r.	E p a c t	Lit. Dnicales Calend. Greg.	Plenilunia media Cal. Gregor. (D. H. M/A)	Lunæ xiiiij Cal. Greg.	Sept uag esi ma	Dies Cine rum	Pasch a Cal. noui	Ascen sio Domi ni
1600	5	xv	b A	29 · 3 · M	29 M	30 Ian.	16 Feb.	2 A	11 Maij
160	6	x	g	17 · 0 · A	17 A	18	7	22 A	31

An ni Do min i	Au r. Nu m.	E p a ct æ	Lit. Dnicales Calend. Greg.	Plenilunia media Cal. Gregor. (D. H. M/A)	Lunæ xiiiij Cal. Greg.	Sept uag esi ma	Dies Cine rum	Pasch a Cal. noui	Ascen sio Domi ni
1		x vj				Feb.	Mar		Maij
160 2	7	v ij	f	6 · 9 · A	6 A	3 Feb.	20 Feb.	7 A	16 Mai
160 3	8	x v ii j	e	26 · 18 · M	26 M	26 Ian.	12 Feb.	30 M	8 Maij
160 4	9	x x i x	d c	13 · 16 · A	14 A	15 Feb.	3 Mar	18 A	27 Maij
160 5	10	x	b	3 · ̄0 · A	3 A	6 Feb.	23 Feb.	10 A	19 Maij
160 6	11	x xj	A	23 · 9 · M	23 M	22 Ian.	8 Feb.	26 M	4 Maij
160 7	12	ij	g	11 · 17 · A	11 A	11 Feb.	28 Feb.	15 A	24 Maij
160 8	13	x ii j	f e	30 · 16 · M	31 M	3 Feb.	20 Feb.	6 A	15 Maij
160 9	14	x x ii ij	d	18 · 13 · A	18 A	15 Feb.	4 Mar	19 A	28 Maij
161 0	15	v	c	7 · 22 · A	8 A	7 Feb.	24 Feb.	11 A	20 Maij
161 1	16	x vj	b	28 · 7 · M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
161 2	17	x x	A g	15 · 4 · A	16 A	19 Feb.	7 Mar	22 A	31 Maij

An ni Do min i	Au r. Nu m.	E p a ct æ	Lit. Dnicales Calend. Greg.	Plenilunia media Cal. Gregor. (D. H. M/A)	Lunæ xiiiij Cal. Greg.	Sept uag esi ma	Dies Cine rum	Pasch a Cal. noui	Ascen sio Domi ni
		v ij					.		
161 3	18	v ii j	f	4 · 13 · A	5 A	3 Feb.	20 Feb.	7 A	16 Maij
161 4	19	x i x	e	24 · 22 · M	25 M	26 Ian.	12 Feb.	30 M	8 Maij
161 5	1	j	d	12 · 20 · A	12 A	15 Feb.	4 Mar	19 A	28 Maij
							.		
161 6	2	x ij	c b	1 · 4 · A	1 A	31 Ian.	17 Feb.	3 A	12 Maij
161 7	3	x x ii j	A	21 · 13 · M	21 M	22 Ian.	8 Feb.	26 M	4 Maij
161 8	4	ii ij	g	9 · 11 · A	9 A	11 Feb.	28 Feb.	15 A	24 Maij
161 9	5	x v	f	29 · 19 · M	29 M	27 Ian.	13 Feb.	31 M	9 Maij
162 0	6	x x vj	e d	16 · 17 · A	17 A	16 Feb.	4 Mar	19 A	28 Maij
							.		
162 1	7	v ij	c	6 · 2 · A	6 A	7 Feb.	24 Feb.	11 A	20 Maij
162 2	8	x v ii j	b	26 · 11 · M	26 M	23 Ian.	9 Feb.	27 M	5 Maij
162	9	x	A	14 · 8 · A	14 A	12	1	16 A	25

An ni Do min i	Au r. Nu m.	E p a c t æ	Lit. Dnicales Calend. Greg.	Plenilunia media Cal. Gregor. (D. H. M/A)	Lunæ xiiiij Cal. Greg.	Sept uag esi ma	Dies Cine rum	Pasch a Cal. noui	Ascen sio Domi ni
3		x i x				Feb.	Mar .		Maij
162 4	10	x	g f	2 · 17 · A	3 A	4 Feb.	21 Feb.	7 A	16 Maij
162 5	11	x x i	e	23 · 2 · M	23 M	26 Ian.	12 Feb.	30 M	8 Maij
162 6	12	ij	d	10 · 23 · A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
162 7	13	x ii j	c	31 · 8 · M	31 M	31 Ian.	17 Feb.	4 A	13 Maij
162 8	14	x x ii ij	b A	18 · 6 · A	18 A	20 Feb.	8 Mar .	23 A	1 Iunij
162 9	15	v	g	7 · 15 · A	8 A	11 Feb.	28 Feb.	15 A	24 Maij
163 0	16	x vj	f	27 · 23 · M	28 M	27 Ian.	13 Feb.	31 M	9 Maij
163 1	17	x x v ij	e	15 · 21 · A	16 A	16 Feb.	5 Mar .	20 A	29 Maij
163 2	18	v ii j	d c	4 · 6 · A	5 A	8 Feb.	25 Feb.	11 A	20 Maij
163 3	19	x i x	b	24 · 15 · M	25 M	23 Ian.	9 Feb.	27 M	5 Maij

An ni Do min i	Au r. Nu m.	E p a ct æ	Lit. Dnicales Calend. Greg.	Plenilunia media Cal. Gregor. (D. H. M/A)	Lunæ xiiij Cal. Greg.	Sept uag esi ma	Dies Cine rum	Pasch a Cal. noui	Ascen sio Domi ni
163 4	1	j	A	12 · 12 · A	12 A	12 Feb.	1 Mar	16 A	25 Maij
163 5	2	x ij	g	1 · 21 · A	1 A	4 Feb.	21 Feb.	8 A	17 Maij
163 6	3	x x ii j	f e	21 · 6 · M	21 M	20 Ian.	6 Feb.	23 M	1 Maij
163 7	4	ii ij	d	9 · 3 · A	9 A	8 Feb.	25 Feb.	12 A	21 Maij
163 8	5	x v	c	29 · 12 · M	29 M	31 Ian.	9 Feb.	4 A	13 Maij
163 9	6	x x vj	b	17 · 10 · A	17 A	20 Feb.	17 Mar	24 A	2 Iunij
164 0	7	v ij	A g	5 · 18 · A	6 A	5 Feb.	22 Feb.	8 A	17 Maij
164 1	8	x v ii j	f	26 · 3 · M	26 M	27 Ian.	13 Feb.	31 M	9 Maij
164 2	9	x x i x	e	14 · 1 · A	14 A	16 Feb.	5 Mar	20 A	29 Maij
164 3	10	x	d	3 · 10 · A	3 A	1 Feb.	18 Feb.	5 A	14 Maij
164 4	11	x xj	c b	22 · 18 · M	23 M	24 Ian.	10 Feb.	27 M	5 Maij
164	12	ij	A	10 · 16 · A	11 A	12	1	16 A	25

An ni Do min i	Au r. Nu m.	E p a ct æ	Lit. Dnicales Calend. Greg.	Plenilunia media Cal. Gregor. (D. H. M/A)	Lunæ xiiiij Cal. Greg.	Sept uag esi ma	Dies Cine rum	Pasch a Cal. noui	Ascen sio Domi ni
5						Feb.	Mar		Maij
164 6	13	x ii j	g	31 · 1 · M	31 M	28 Ian.	14 Feb.	1 A	10 Maij
164 7	14	x x ii ij	f	18 · 22 · A	18 A	17 Feb.	6 Mar	21 A	30 Maij
164 8	15	v	e d	7 · 7 · A	8 A	9 Feb.	26 Feb.	12 A	21 Maij
164 9	16	x v i	c	27 · 16 · M	28 M	31 Ian.	17 Feb.	4 A	13 Maij
165 0	17	x x v ij	b	15 · 13 · A	16 A	13 Feb.	2 Mar	17 A	26 Maij
165 1	18	v ii j	A	4 · 22 · A	5 A	5 Feb.	22 Feb.	9 A	18 Maij
165 2	19	x i x	g f	24 · 7 · M	25 M	28 Ian.	14 Feb.	31 M	9 Maij
165 3	1	j	e	12 · 5 · A	12 A	9 Feb.	26 Feb.	13 A	22 Maij
165 4	2	x ij	d	1 · 13 · A	1 A	1 Feb.	18 Feb.	5 A	14 Maij
165 5	3	x x ii	c	21 · 22 · M	21 M	24 Ian.	10 Feb.	28 M	6 Maij

An		E							
ni	Au	p	Lit.	Plenilunia		Sept			Ascen
Do	r.	a	Dnicales	media Cal.	Lunæ	uag	Dies	Pasch	sio
min	Nu	ct	Calend.	Gregor. (D.	xiiiij Cal.	esi	Cine	a Cal.	Domi
i	m.	æ	Greg.	H. M/A)	Greg.	ma	rum	noui	ni

j

The *Tabula Festorum Mobilium* of Caput XXII continues across this opening and the next. On each opening the movable feasts of one span of years are set out over the two facing pages: the verso carries the *Table of the Movable Feasts* reckoned by the **new (Gregorian) calendar**, and the facing recto carries the corresponding *Movable [Feasts] of the Seasons* with the **old (Julian, "veteris") calendar** figures alongside. The first leaf here (folio 381) is the old-calendar recto for the years 1600–1655 (companion to the Gregorian leaf of the preceding opening); folios 382–383 form the next opening, covering 1656–1711.

Month codes throughout the lunar and Easter columns: **M** = March (Martius), **A** = April (Aprilis). In the "mean full moon" column the three figures are day · hour · month.

Movable [Feasts] of the Seasons (old calendar), A.D. 1600–1655

Columns: A.D. | Pentecost | Corpus Christi | Indiction | Sundays after Pentecost | First Sunday of Advent | Dominical letter(s), old cal. | Luna 14, old cal. | Easter, old cal. | Days by which new-calendar Easter differs from old-calendar Easter.

A			I					D
. Pen			n Sun.			Luna		i
D tec	Corpus		d aft.		Dom.	14	Easter	ff
. ost	Christi		. Pent.	1st Adv.	(vet.)	(vet.)	(vet.)	f.
1 21	1 Iunij		1 27	3 Dec.	f e	22 M	23 M	0
6 Mai			3					
0 j								
0								
1 10	21 Iunij		1 24	2 Dec.	d	10 A	12 A	0
6 Iun			4					
0 ij								
1								

A D . Pen ost	Corpus Christi	I n Sun. d aft. . Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
1 26 6 Mai 0 j 2	6 Iunij	1 26 5	1 Dec.	c	30 M	4 A	7
1 18 6 Mai 0 j 3	29 Maij	1 27	30 Nou.	b	18 A	24 A	3 5
1 6 6 Iun 0 ij 4	17 Iunij	2 24	28 Nou.	A g	7 A	8 A	0
1 29 6 Mai 0 j 5	9 Iunij	3 25	27 Nou.	f	27 M	31 M	0
1 14 6 Mai 0 j 6	25 Maij	4 28	3 Dec.	e	15 A	20 A	3 5
1 3 6 Iun 0 ij 7	14 Iunij	5 25	2 Dec.	d	4 A	5 A	0
1 25 6 Mai 0 j 8	5 Iunij	6 26	30 Nou.	c b	24 M	27 M	0
1 7 6 Iun 0 ij 9	18 Iunij	7 24	29 Nou.	A	12 A	16 A	7
1 30	10 Iunij	8 25	28 Nou.	g	1 A	8 A	7

A n D n D n D	Pen tec ost	Corpus Christi	I n Sun. d aft. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
6 1 0	Mai j							
1 6 1 1	22 Mai j	2 Iunij	9 26	27 Nou.	f	21 M	24 M	0
1 6 1 2	10 Iun ij	21 Iunij	1 24 0	2 Dec.	e d	9 A	12 A	0
1 6 1 3	26 Mai j	6 Iunij	1 26 1	1 Dec.	c	29 M	4 A	7
1 6 1 4	18 Mai j	29 Maij	1 27 2	30 Nou.	b	17 A	24 A	3 5
1 6 1 5	7 Iun ij	18 Iunij	1 24 3	29 Nou.	A	5 A	9 A	0
1 6 1 6	22 Mai j	2 Iunij	1 26 4	27 Nou.	g f	25 M	31 M	7
1 6 1 7	14 Mai j	25 Maij	1 28 5	3 Dec.	e	13 A	20 A	3 5
1 6	3 Iun	14 Iunij	1 25	2 Dec.	d	2 A	5 A	0

A D .	Pen tec ost	Corpus Christi	I n Sun. d aft. . Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
1 8	ij							
1 6 1 9	19 Mai j	30 Maij	2 27	1 Dec.	c	22 M	28 M	7
1 6 2 0	7 Iun ij	18 Iunij	3 24	29 Nou.	b A	10 A	16 A	7
1 6 2 1	30 Mai j	10 Iunij	4 25	28 Nou.	g	30 M	1 A	0
1 6 2 2	15 Mai j	26 Maij	5 27	27 Nou.	f	18 A	21 A	3 5
1 6 2 3	4 Iun ij	15 Iunij	6 25	3 Dec.	e	7 A	13 A	7
1 6 2 4	26 Mai j	6 Iunij	7 26	1 Dec.	d c	27 M	28 M	0
1 6 2 5	18 Mai j	29 Maij	8 27	30 Nou.	b	15 A	17 A	2 8
1 6 2	31 Mai j	11 Iunij	9 25	29 Nou.	A	4 A	9 A	7

A D .	Pen tec ost	Corpus Christi	I n Sun. d aft. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
6								
1 6 2 7	23 Mai j	3 Iunij	1 0	26 28 Nou.	g	24 M	25 M	0
1 6 2 8	11 Iun ij	22 Iunij	1 1	24 3 Dec.	f e	12 A	13 A	0
1 6 2 9	3 Iun ij	14 Iunij	1 2	25 2 Dec.	d	1 A	5 A	0
1 6 3 0	19 Mai j	30 Maij	1 3	27 1 Dec.	c	21 M	28 M	7
1 6 3 1	8 Iun ij	19 Iunij	1 4	24 30 Nou.	b	9 A	10 A	0
1 6 3 2	30 Mai j	10 Iunij	1 5	25 28 Nou.	A g	29 M	1 A	0
1 6 3 3	15 Mai j	26 Maij	1	27 27 Nou.	f	17 A	21 A	3 5
1 6 3 4	4 Iun ij	15 Iunij	2	25 3 Dec.	e	5 A	6 A	0

A D . Pen tec ost	Corpus Christi	I n Sun. d aft. . Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
1 27 6 Mai 3 j 5	7 Iunij	3 26	2 Dec.	d	25 M	29 M	0
1 11 6 Mai 3 j 6	22 Maij	4 28	30 Nou.	c b	13 A	17 A	3 5
1 31 6 Mai 3 j 7	11 Iunij	5 25	39 Nou. [recte: 29 Nou.]	A	2 A	9 A	7
1 23 6 Mai 3 j 8	3 Iunij	6 26	28 Nou.	g	22 M	25 M	0
1 12 6 Iun 3 ij 9	23 Iunij	7 23	27 Nou.	f	10 A	14 A	0
1 27 6 Mai 4 j 0	7 Iunij	8 26	2 Dec.	e d	30 M	5 A	7
1 19 6 Mai 4 j 1	30 Iunij [recte: 30 Maij]	9 27	1 Dec.	c	18 A	25 A	3 5
1 8 6 Iun 4 ij 2	19 Iunij	1 24 0	30 Nou.	b	7 A	10 A	0
1 24	4 Iunij	1 26	29 Nou.	A	27 M	2 A	7

A n D n D n D	Pen tec ost	Corpus Christi	I n Sun. d aft. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
6 4 3	Mai j		1					
1 6 4 4	15 Mai j	26 Maij	1 27 2	27 Nou.	g f	15 A	21 A	3 5
1 6 4 5	4 Iun ij	15 Iunij	1 25 3	3 Dec.	e	4 A	6 A	0
1 6 4 6	20 Mai j	31 Iunij [recte: 31 Maij]	1 27 4	2 Dec.	d	24 M	29 M	7
1 6 4 7	9 Iun ij	20 Iunij	1 24 5	1 Dec.	c	12 A	18 A	7
1 6 4 8	31 Mai j	11 Iunij	1 25	29 Nou.	b A	1 A	2 A	0
1 6 4 9	23 Mai j	3 Iunij	2 26	28 Nou.	g	21 M	25 M	0
1 6 5 0	5 Iun ij	16 Iunij	3 24	27 Nou.	f	9 A	14 A	7
1 6	28 Mai	8 Iunij	4 26	3 Dec.	e	29 M	30 M	0

A D .	Pen tec ost	Corpus Christi	I n d .	Sun. aft. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff f.
5 1	j								
1 6 5 2	19 Mai j	30 Iunii [recte: 30 Maij]	5	27	1 Dec.	d c	17 A	18 A	2 8
1 6 5 3	1 Iun ij	12 Iunij	6	25	30 Nou.	b	5 A	10 A	7
1 6 5 4	24 Mai i	4 Iunij	7	26	29 Nou.	A	25 M	26 M	0
1 6 5 5	16 Mai j	27 Maij	8	27	28 Nou.	g	13 A	15 A	2 8

A D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
1 6 5 7	5	xv	g	29·5·M	29 M	28 Ian.	14 Feb.	1 A	10 Maij
1 6 5 8	6	xx vj	f	17·2·A	17 A	17 Feb.	6 Mar	21 A	30 Maij
1 6 5 9	7	vij	e	6·11·A	6 A	9 Feb.	26 Feb.	13 A	22 Maij
1 6 6 0	8	xv iij	d c	25·20·M	26 M	25 Ian.	11 Feb.	28 M	6 Maij
1 6 6 1	9	xx ix	b	13·17·A	14 A	13 Feb.	2 Mar	17 A	26 Maij
1 6 6 2	10	x	A	3·2·A	3 A	5 Feb.	22 Feb.	9 A	18 Maij
1 6 6 3	11	xx j	g	23·11·M	23 M	21 Ian.	7 Feb.	25 M	3 Maij
1 6 6 4	12	ij	f e	10·8·A	11 A	10 Feb.	27 Feb.	13 A	22 Maij
1	13	xii	d	30·17·M	31	1 Feb.	18	5 A	14

A . D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
6 6 5		j			M		Feb.		Maij
1 6 6 6	14	xx iiij	c	18·15·A	18 A	21 Feb.	10 Mar .	25 A	3 Iunij
1 6 6 7	15	v	b	8·0·A	8 A	6 Feb.	23 Feb.	10 A	19 Maij
1 6 6 8	16	xv j	A g	27·8·M	28 M	29 Ian.	15 Feb.	1 A	10 Maij
1 6 6 9	17	xx vij	f	15·6·A	16 A	17 Feb.	6 Mar .	21 A	30 Maij
1 6 7 0	18	vii j	e	4·15·A	5 A	2 Feb.	19 Feb.	6 A	15 Maij
1 6 7 1	19	xi x	d	25·0·M	25 M	25 Ian.	11 Feb.	29 M	7 Maij
1 6 7 2	1	j	c b	11·21·A	12 A	14 Feb.	2 Mar .	17 A	26 Maij
1 6	2	xij	A	1·6·A	1 A	29 Ian.	15 Feb.	2 A	11 Maij

A . D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
7 3 1 6 7 4	3	xx iiij	g	21·15·M	21 M	21 Ian.	7 Feb.	25 M	3 Maij
1 6 7 5	4	iiij	f	9·12·A	9 A	10 Feb.	27 Feb.	14 A	23 Maij
1 6 7 6	5	xv	e d	28·21·M	29 M	2 Feb.	19 Feb.	5 A	14 Maij
1 6 7 7	6	xx vj	c	16·19·A	17 A	14 Feb.	3 Mar .	18 A	27 Maij
1 6 7 8	7	vij	b	6·3·A	6 A	6 Feb.	23 Feb.	10 A	19 Maij
1 6 7 9	8	xv iiij	A	26·12·M	26 M	29 Ian.	15 Feb.	2 A	11 Maij
1 6 8 0	9	xx ix	g f	13·10·A	14 A	18 Feb.	6 Mar .	21 A	30 Maij
1 6 8	10	x	e	2·19·A	2 A	2 Feb.	19 Feb.	6 A	15 Maij

A . D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
1									
1 6 8 2	11	xx j	d	23·3·M	23 M	25 Ian.	11 Feb.	29 M	7 Maij
1 6 8 3	12	ij	c	11·1·A	11 A	14 Feb.	3 Mar .	18 A	27 Maij
1 6 8 4	13	xii j	b A	30·10·M	31 M	30 Ian.	16 Feb.	2 A	11 Maij
1 6 8 5	14	xx iiij	g	18·7·A	18 A	18 Feb.	7 Mar .	22 A	31 Maij
1 6 8 6	15	v	f	7·16·A	8 A	10 Feb.	27 Feb.	14 A	23 Maij
1 6 8 7	16	xv j	e	28·1·M	28 M	26 Ian.	12 Feb.	30 M	8 Maij
1 6 8 8	17	xx vij	d c	14·23·A	16 A	15 Feb.	3 Mar .	18 A	27 Maij
1 6 8 9	18	vii j	b	4·7·A	5 A	6 Feb.	23 Feb.	10 A	19 Maij

A D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
1 6 9 0	19	xi x	A	24·16·M	25 M	22 Ian.	8 Feb.	26 M	4 Maij
1 6 9 1	1	j	g	12·14·A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
1 6 9 2	2	xij	f e	31·22·M	1 A	3 Feb.	20 Feb.	6 A	15 Maij
1 6 9 3	3	xx ij	d	21·7·M	21 M	18 Ian.	4 Feb.	22 M	30 Apr.
1 6 9 4	4	iiij	c	9·5·A	9 A	7 Feb.	24 Feb.	11 A	20 Maij
1 6 9 5	5	xv	b	29·14·M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
1 6 9 6	6	xx vj	A g	16·11·A	17 A	19 Feb.	7 Mar .	22 A	31 Maij
1 6 9 7	7	vij	f	5·20·A	6 A	3 Feb.	20 Feb.	7 A	16 Maij
1	8	xv	e	26·5·M	26	26 Ian.	12	30 M	8

A D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
6 9 8		iiij			M		Feb.		Maij
1 6 9 9	9	xx ix	d	14·2·A	14 A	15 Feb.	4 Mar .	19 A	28 Maij
1 7 0 0	10	ix	c	4·11·A	4 A	7 Feb.	24 Feb.	11 A	20 Maij
1 7 0 1	11	xx	b	23·20·M	24 M	23 Ian.	9 Feb.	27 M	5 Maij
1 7 0 2	12	j	A	11·18·A	12 A	12 Feb.	1 Mar .	16 A	25 Maij
1 7 0 3	13	xij	g	1·2·A	1 A	4 Feb.	21 Feb.	8 A	17 Maij
1 7 0 4	14	xx iiij	f e	20·11·M	21 M	20 Ian.	6 Feb.	23 M	1 Maij
1 7 0 5	15	iiij	d	8·9·A	9 A	8 Feb.	25 Feb.	12 A	21 Maij
1 7	16	xv	c	28·18·M	29 M	31 Ian.	17 Feb.	4 A	13 Maij

A D .	Gold. No.	Ep ac t	Dom. (Greg.)	Mean full moon (d·h·mo.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
0 6 1 7 0 7 1 7 0 8 1 7 0 9 1 7 1 0 1 7 1 1	17 18 19 1 2	xx vj vij xv ijj * xj	b A g f e d	16·15·A 5·0·A 25·9·M 13·6·A 2·15·A	17 A 6 A 26 M 13 A 2 A	20 Feb. 5 Feb. 27 Ian. 16 Feb. 1 Feb.	9 Mar 22 Feb. 13 Feb. 5 Mar 18 Feb.	24 A 8 A 31 M 20 A 5 A	2 Iunij 17 Maij 9 Maij 29 Maij 14 Maij

Movable [Feasts] of the Seasons (old calendar), A.D. 1656–1711

Columns as folio 381.

A D .	Pent ecos t	Corpus Christi	I n d .	Sun. aft. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff .
1 6	4 Iunij	15 Iunij	9	25	3 Dec.	f e	2 A	6 A	0

A Pentecos t	Corpus Christi	I n d Sun. aft. Pent.	1st Adv Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff
5						
6						
1 20 6 Maij	31 Maij	1 27 0	2 d Dec.	22 M	29 M	7
5						
7						
1 9 6 Iunij	20 Iunij	1 24 1	1 c Dec.	10 A	11 A	0
5						
8						
1 1 6 Iunij	12 Iunij	1 25 2	30 b Nou .	30 M	3 A	0
5						
9						
1 16 6 Maij	27 Iunij [recte: 27 Maij]	1 27 3	28 A g Nou .	18 A	22 A	3 5
6						
0						
1 5 6 Iunij	16 Iunij	1 24 4	27 f Nou .	7 A	14 A	7
6						
1						
1 28 6 Maij	8 Iunij	1 26 5	3 e Dec.	27 M	30 M	0
6						
2						
1 13 6 Maij	24 Maij	1 28	2 d Dec.	15 A	19 A	3 5
6						
3						
1 1 6 Iunij	12 Iunij	2 25	30 c b Nou .	4 A	10 A	7
6						

A Pent ecos t	Corpus Christi	I n d Sun. aft. Pent.	1st Adv Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff
4						
1 24 6 Maij 6 5	4 Iunij	3 26	29 A Nou .	24 M	26 M	0
1 13 6 Iunij 6 6	24 Iunij	4 23	28 g Nou .	12 A	15 A	0
1 29 6 Maij 6 7	9 Iunij	5 25	27 f Nou .	1 A	7 A	7
1 20 6 Maij 6 8	31 Maij	6 27	2 e d Dec.	21 M	22 M	0
1 9 6 Iunij 6 9	20 Iunij	7 24	1 c Dec.	9 A	11 A	0
1 25 6 Maij 7 0	5 Iunij	8 26	30 b Nou .	29 M	3 A	7
1 17 6 Maij 7 1	28 Maij	9 27	29 A Nou .	17 A	23 A	3 5
1 5 6 Iunij 7 2	16 Iunij	1 24 0	27 g f Nou .	5 A	7 A	0

A D .	Pent ecos t	Corpus Christi	I n d .	Sun. aft. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff .
1 6 7 3	21 Maij	1 Iunij	1 1	27	3 Dec.	e	25 M	30 M	7
1 6 7 4	13 Maij	24 Maij	1 2	28	2 Dec.	d	13 A	19 A	3 5
1 6 7 5	2 Iunij	13 Iunij	1 3	25	1 Dec.	c	2 A	4 A	0
1 6 7 6	24 Maij	4 Iunij	1 4	26	29 Nou .	b A	22 M	26 M	0
1 6 7 7	6 Iunij	17 Iunij	1 5	24	28 Nou .	g	10 A	15 A	7
1 6 7 8	29 Maij	9 Iunij	1	25	27 Nou .	f	30 M	31 M	0
1 6 7 9	21 Maij	1 Iunij	2	27	3 Dec.	e	18 A	20 A	2 8
1 6 8 0	9 Iunij	20 Iunij	3	24	1 Dec.	d c	7 A	11 A	0
1	25	5 Iunij	4	26	30	b	27 M	3 A	7

A Pent ecos t	Corpus Christi	I n d Sun. aft. Pent.	1st Adv Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff
6 8 1	Maij		Nou			
1 6 8 2	17 Maij	28 Maij	5 27	29 Nou	A 15 A 16 A	2 8
1 6 8 3	6 Iunij	17 Iunij	6 24	28 Nou	g 4 A 8 A	0
1 6 8 4	21 Maij	1 Iunij	7 27	3 Dec.	f e 24 M 30 M	7
1 6 8 5	10 Iunij	21 Iunij	8 24	2 Dec.	d 12 A 19 A	7
1 6 8 6	2 Iunij	13 Iunij	9 25	1 Dec.	c 1 A 4 A	0
1 6 8 7	18 Maij	29 Maij	1 27 0	30 Nou	b 21 M 27 M	7
1 6 8 8	6 Iunij	17 Iunij	1 24 1	28 Nou	A g 9 A 15 A	7
1 6	29 Maij	9 Iunij	1 25 2	27 Nou	f 26 M 31 M	0

A Pentecos t	Corpus Christi	I n d Sun. aft. Pent.	1st Adv Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff
8 9			.			
1 14 6 Maij	25 Maij	1 28 3	3 e Dec.	17 A	20 A	3 5
9 0						
1 3 6 Iunij	14 Iunij	1 25 4	2 d Dec.	5 A	12 A	7
9 1						
1 25 6 Maij	5 Iunij	1 26 5	30 c b Nou .	25 M	27 M	0
9 2						
1 10 6 Maij	21 Maij	1 28	29 A Nou .	13 A	16 A	3 5
9 3						
1 30 6 Maij	10 Iunij	2 25	28 g Nou .	2 A	8 A	7
9 4						
1 22 6 Maij	2 Iunij	3 26	27 f Nou .	22 M	24 M	0
9 5						
1 10 6 Iunij	21 Iunij	4 24	2 e d Dec.	10 A	12 A	0
9 6						
1 26 6 Maij	6 Iunij	5 26	1 c Dec.	30 M	4 A	7
9						

A Pent ecos t	Corpus Christi	I n d Sun. aft. Pent.	1st Adv Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff
7						
1 18 6 Maij 9 8	29 Maij	6 27	30 b Nou .	18 A	24 A	3 5
1 7 6 Iunij 9 9	18 Iunij	7 24	29 A Nou .	7 A	9 A	0
1 30 7 Maij 0 0	10 Iunij	8 25	28 g f Nou .	27 M	31 M	0
1 15 7 Maij 0 1	26 Maij	9 27	27 e Nou .	15 A	20 A	3 5
1 4 7 Iunij 0 2	15 Iunij	1 25 0	3 d Dec.	4 A	5 A	0
1 27 7 Maij 0 3	7 Iunij	1 26 1	2 c Dec.	24 M	28 M	0
1 11 7 Maij 0 4	22 Iunii [recte: 22 Maij]	1 28 2	30 b A Nou .	12 A	16 A	3 5
1 31 7 Maij 0 5	11 Maij [recte: 11 Iunij]	1 25 3	29 g Nou .	1 A	8 A	7

A			I		1st			D
. Pent			n	Sun. aft.	Adv	Dom.	Luna 14	i
D ecos			d	Pent.	. Adv	(vet.)	(vet.)	ff
. t	Corpus Christi		. Pent.		. Adv	(vet.)	(vet.)	.
1 23	3 Iunij		1 26		28 f	21 M	24 M	0
7 Maij			4		Nou			
0					.			
6								
1 12	23 Iunij		1 23		27 e	9 A	13 A	0
7 Iunij			5		Nou			
0					.			
7								
1 27	7 Iunij		1 26		2 d c	29 M	4 A	7
7 Maii					Dec.			
0								
8								
1 19	30 Maij		2 27		1 b	17 A	24 A	3
7 Maij					Dec.			5
0								
9								
1 8	19 Iunij		3 24		30 A	5 A	9 A	0
7 Iunij					Nou			
1					.			
0								
1 24	4 Iunij		4 26		29 g	25 M	1 A	7
7 Maij					Nou			
1					.			
1								

The *Table of the Movable Feasts, Year by Year* (Caput XXII) continues. It is laid out as a paired opening: a left-hand (new-calendar / Gregorian) leaf and a right-hand (old-calendar / *veteris*) leaf covering the same span of years, followed by the next new-calendar leaf. The present pages carry the years 1712–1767 (folios 384–385, one opening) and 1768–1823 (folio 386, the next new-calendar leaf).

Conventions preserved from the source: in the "mean full moon" and "Luna 14" columns the trailing letter is the month — **M** = **Martius (March)**, **A** = **Aprilis (April)**; the mean-full-moon cell gives day · hour · month. Epact 30 is printed as

the asterisk *. All epacts in this range are Roman (no Arabic 25 appears). Dominical-letter cells carry two letters in leap years (the letter regresses at 29 February). In the old-calendar leaf the Julian Dominical column treats every fourth year as leap.

[New-calendar leaf — folio 384] CALEND. GREG. — TABVLA FESTORVM [MOBILIVM TEMPORARIA]

Columns: A.D. [*Anni Domini*] · Golden Number [*Aur. Num.*] · Epact [*Epactæ*] · Dominical Letters, new cal. [*Lit. Dñicales Calend. Greg.*] · Mean Full Moon, new cal. [*Plenilunia media Cal. Gregor. — D. H.*] · Luna 14, new cal. [*Lunæ xiiij. Calendarij Gregoriani*] · Septuagesima · Ash Wednesday [*Dies Cinerum*] · Easter, new cal. [*Pascha Calend. noui*] · Ascension [*Ascensio Domini*]

A

D	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
1 7 1 2	xxi j	c b	22. 0 M	22 M	24 Ian.	10 Feb.	27 M	5 Maij
1 7 1 3	iiij	A	9. 21 A	10 A	12 Feb.	1 Mar.	16 A	25 Maij
1 7 1 4	xiii j	g	30. 6 M	30 M	28 Ian.	14 Feb.	1 A	10 Maij
1 7 1 5	xx v	f	18. 4 A	18 A	17 Feb.	6 Mar.	21 A	30 Maij
1 7 1 6	vj	e d	6. 13 A	7 A	9 Feb.	26 Feb.	12 A	21 Maij
1	xvi	c	16. 21 M	27	24 Ian.	10	28 M	6

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
7 1 7	j			M		Feb.		Maij
1 7 1 8	xx viiij	b	14. 19 A	15 A	13 Feb.	2 Mar.	17 A	26 Maij
1 7 1 9	ix	A	4. 4 A	4 A	5 Feb.	22 Feb.	9 A	18 Maij
1 7 2 0	xx	g f	23. 13 M	24 M	28 Ian.	14 Feb.	31 M	9 Maij
1 7 2 1	j	e	11. 10 A	12 A	9 Feb.	26 Feb.	13 A	22 Maij
1 7 2 2	xij	d	31. 19 M	1 A	1 Feb.	18 Feb.	5 A	14 Maij
1 7 2 3	xxi ij	c	21. 4 A [recte: 20. 20 M]	21 M	24 Ian.	10 Feb.	28 M	6 Maij
1 7 2 4	iiij	b A	8. 1 A	9 A	13 Feb.	1 Mar.	16 A	25 Maij
1 7	xv	g	28. 10 M	29 M	28 Ian.	14 Feb.	1 A	10 Maij

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
2 5 1 7 2 6	xx vj	f	16. 8 A	17 A	17 Feb.	6 Mar.	21 A	30 Maij
1 7 2 7	vij	e	5. 16 A	6 A	9 Feb.	26 Feb.	13 A	22 Maij
1 7 2 8	xvi ij	d c	25. 1 M	26 M	25 Ian.	11 Feb.	28 M	6 Maij
1 7 2 9	*	b	13. 23 A	13 A	13 Feb.	2 Mar.	17 A	26 Maij
1 7 3 0	xj	A	2. 8 A	2 A	5 Feb.	22 Feb.	9 A	18 Maij
1 7 3 1	xxi j	g	22. 16 M	22 M	21 Ian.	7 Feb.	25 M	3 Maij
1 7 3 2	iiij	f e	9. 14 A	10 A	10 Feb.	27 Feb.	13 A	22 Maij
1 7 3	xiii j	d	29. 23 M	30 M	1 Feb.	18 Feb.	5 A	14 Maij

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
3								
1 7 3 4	xx v	c	17. 20 A	18 A	21 Feb.	10 Mar.	25 A	3 Iunij
1 7 3 5	vj	b	7. 5 A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
1 7 3 6	xvi j	A g	26. 14 M	27 M	29 Ian.	15 Feb.	1 A	10 Maij
1 7 3 7	xx viiij	f	11. 14 A	15 A	17 Feb.	6 Mar.	21 A	30 Maij
1 7 3 8	ix	e	3. 20 A	4 A	2 Feb.	19 Feb.	6 A	15 Maij
1 7 3 9	xx	d	24. 5 M	24 M	25 Ian.	11 Feb.	29 M	7 Maij
1 7 4 0	j	c b	11. 3 A	12 A	14 Feb.	2 Mar.	17 A	26 Maij
1 7 4 1	xij	A	31. 11 M	1 A	29 Ian.	15 Feb.	2 A	11 Maij

A

.
D
.

	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
1 7 4 2	xxi ij	g	20. 20 M	21 M	21 Ian.	7 Feb.	25 M	3 Maij
1 7 4 3	iii j	f	8. 18 A	9 A	10 Feb.	27 Feb.	14 A	23 Maij
1 7 4 4	xv	e d	28. 3 M	29 M	2 Feb.	19 Feb.	5 A	14 Maij
1 7 4 5	xx vj	c	16. 0 A	17 A	14 Feb.	3 Mar.	18 A	27 Maij
1 7 4 6	vij	b	5. 9 A	6 A	6 Feb.	23 Feb.	10 A	19 Maij
1 7 4 7	xvi ij	A	25. 18 M	26 M	29 Ian.	15 Feb.	2 A	11 Maij
1 7 4 8	*	g f	12. 15 A	13 A	11 Feb.	28 Feb.	14 A	23 Maij
1 7 4 9	xj	e	2. 0 A	2 A	2 Feb.	19 Feb.	6 A	15 Maij
1	xxi	d	22. 9 M	22	25 Ian.	11	29 M	7

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
7 5 0	j			M		Feb.		Maij
1 7 5 1	iiij	c	10. 6 A	10 A	7 Feb.	24 Feb.	11 A	20 Maij
1 7 5 2	xiii j	b A	29. 15 M	30 M	30 Ian.	16 Feb.	2 A	11 Maij
1 7 5 3	xx v	g	17. 13 A	18 A	18 Feb.	7 Mar.	22 A	31 Maij
1 7 5 4	vj	f	6. 22 A	7 A	10 Feb.	27 Feb.	14 A	23 Maij
1 7 5 5	xvi j	e	67. 6 M [recte: 26. 14 M]	27 M	26 Ian.	12 Feb.	30 M	8 Maij
1 7 5 6	xx viiij	d c	14. 4 A	15 A	15 Feb.	3 Mar.	18 A	27 Maij
1 7 5 7	ix	b	3. 13 A	4 A	6 Feb.	23 Feb.	10 A	19 Maij
1 7	xx	A	23. 22 M	24 M	22 Ian.	8 Feb.	26 M	4 Maij

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lun a 14	Septuag esima	Ash Wed.	Easter (new)	Ascen sion
5 8								
1 7 5 9	j	g	11. 19 A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
1 7 6 0	xij	f e	31. 4 M	1 A	3 Feb.	20 Feb.	6 A	15 Maij
1 7 6 1	xxi ij	d	20. 13 M	21 M	18 Ian.	4 Feb.	22 M	30 Apr.
1 7 6 2	iiij	c	8. 10 A	9 A	7 Feb.	24 Feb.	11 A	20 Maij
1 7 6 3	xv	b	28. 19 M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
1 7 6 4	xx vj	A g	15. 17 A	17 A	19 Feb.	7 Mar.	22 A	31 Maij
1 7 6 5	vij	f	5. 1 A	6 A	3 Feb.	20 Feb.	7 A	16 Maij
1 7 6	xvi ij	e	25. 10 M	26 M	26 Ian.	12 Feb.	30 M	8 Maij

A								
D	Ep	Dom.		Lun	Septuag	Ash	Easter	Ascen
.	act	Let.	Full Moon (D. H.)	a 14	esima	Wed.	(new)	sion
6								
1	*	d	13. 8 A	13	15 Feb.	4	19 A	28
7				A		Mar.		Maij
6								
7								

[Old-calendar leaf — folio 385] CAPVT XXII. — [TABVLA FESTORVM] MOBILIVM TEMPORARIA.

Columns: A.D. [*Anni Domini*] · Pentecost [*Pentecoste*] · Corpus Christi [*Corpus Domini*] · Indiction [*Indictio*] · Sundays after Pentecost [*Diicæ post Pentecosten*] · First Sunday of Advent [*Dominica prima Aduentus*] · Dominical Letters, old cal. [*Literæ Dominicales Calend. veteris*] · Luna 14, old cal. [*Lunæ xiiij. Calend. veteris*] · Easter, old cal. [*Pascha Calédarij veteris*] · Days by which the new-cal. Easter differs from the old-cal. Easter [*Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt*]

A									D
.	Pen		In			Dom.	Luna		i
D	teco		di	Sun. aft.	1st Sun.	Let.	14	Easter	ff
.	st	Corpus Christi	ct.	Pent.	Advent	(old)	(old)	(old)	.
1	15	26 Maij	5	27	27 Nou.	f e	13 A	20 A	3
7	Mai								5
1	j								
2									
1	4	15 Iunij	6	25	3 Dec.	d	2 A	5 A	0
7	Iuni								
1	j								
3									
1	20	31 Maij	7	27	2 Dec.	c	22 M	28 M	7
7	Mai								
1	j								
4									
1	9	20 Iunij	8	24	1 Dec.	b	10 A	17 A	7
7	Iuni								

A D . st	Pen teco st	Corpus Christi	In di ct.	Sun. aft. Pent.	1st Sun. Advent	Dom. Let. (old)	Luna 14 (old)	Easter (old)	D i ff .
1 5	j Mai								
1 7	31 Mai	11 Iunij	9	25	29 Nou.	A g	30 M	1 A	0
1 6	j Mai								
1 7	16 Mai	27 Maij	10	27	28 Nou.	f	18 A	21 A	3 5
1 7	j Mai								
1 8	5 Iuni	16 Iunij	11	24	27 Nou.	e	7 A	13 A	7
1 9	28 Mai	8 Iunij	12	26	3 Dec.	d	27 M	29 M	0
1 2	19 Mai	30 Maij	13	27	1 Dec.	c b	15 A	17 A	2 8
1 2	1 Iuni	12 Iunij	14	25	30 Nou.	A	4 A	9 A	7
1 2	24 Mai	4 Iunij	15	26	29 Nou.	g	24 M	25 M	0
1 2	16 Mai	27 Maij	1	27	28 Nou.	f	12 A	14 A	2 8
1 2	j Mai								

A D . st	Pen teco st	Corpus Christi	In di ct.	Sun. aft. Pent.	1st Sun. Advent	Dom. Let. (old)	Luna 14 (old)	Easter (old)	D i ff .
3									
1 4 7 Iuni 2 j 4	15 Iunij	2	25	3 Dec.	e d	1 A	5 A	0	
1 20 7 Mai 2 j 5	31 Maij	3	27	2 Dec.	c	21 M	28 M	7	
1 9 7 Iuni 2 j 6	20 Iunij	4	24	1 Dec.	b	9 A	10 A	0	
1 1 7 Iuni 2 j 7	12 Iunij	5	25	30 Nou.	A	29 M	2 A	0	
1 16 7 Mai 2 j 8	27 Maij	6	27	28 Nou.	g f	17 A	21 A	3 5	
1 5 7 Iuni 2 j 9	16 Iunij	7	24	27 Nou.	e	5 A	6 A	0	
1 28 7 Mai 3 j 0	8 Iunij	8	26	3 Dec.	d	25 M	29 M	0	
1 13 7 Mai 3 j 1	24 Maij	9	28	2 Dec.	c	13 A	18 A	3 5	

A D . st	Pen teco st	Corpus Christi	In di ct.	Sun. aft. Pent.	1st Sun. Advent	Dom. Let. (old)	Luna 14 (old)	Easter (old)	D i ff .
1 7 3 2	1 Iuni j	12 Iunij	10	25	30 Nou.	b A	2 A	9 A	7
1 7 3 3	24 Mai j	4 Iunij	11	26	29 Nou.	g	22 M	25 M	0
1 7 3 4	13 Iuni j	24 Iunij	12	23	28 Nou.	f	10 A	14 A	0
1 7 3 5	29 Mai j	9 Iunij	13	25	27 Nou.	e	30 M	6 A	7
1 7 3 6	20 Mai j	31 Maij	14	27	2 Dec.	d c	18 A	25 A	3 5
1 7 3 7	9 Iuni j	20 Iunij	15	24	1 Dec.	b	7 A	10 A	0
1 7 3 8	25 Mai j	5 Iunij	1	26	30 Nou.	A	27 M	2 A	7
1 7 3 9	17 Mai j	28 Maij	2	27	29 Nou.	g	15 A	22 A	3 5
1 5	16 Iunij		3	24	27 Nou.	f e	4 A	6 A	0

A	Pen		In			Dom.	Luna		D
D	teco		di	Sun. aft.	1st Sun.	Let.	14	Easter	i
.	st	Corpus Christi	ct.	Pent.	Advent	(old)	(old)	(old)	ff
7	Iuni								
4	j								
0									
1	21	1 Iunij	4	27	3 Dec.	d	24 M	29 M	7
7	Mai								
4	j								
1									
1	13	24 Maij	5	28	2 Dec.	c	12 A	18 A	3
7	Mai								5
4	j								
2									
1	2	13 Iunij	6	25	1 Dec.	b	1 A	3 A	0
7	Iuni								
4	j								
3									
1	24	4 Iunij	7	26	29 Nou.	A g	21 M	25 M	0
7	Mai								
4	j								
4									
1	6	17 Iunij	8	24	28 Nou.	f	9 A	14 A	7
7	Iuni								
4	j								
5									
1	29	9 Iunij	9	25	27 Nou.	e	29 M	30 M	0
7	Mai								
4	j								
6									
1	21	1 Iunij	10	27	3 Dec.	d	17 A	19 A	2
7	Mai								8
4	j								
7									
1	2	13 Iunij	11	25	1 Dec.	c b	5 A	10 A	7
7	Iuni								

A D . st	Pen teco st	Corpus Christi	In di ct.	Sun. aft. Pent.	1st Sun. Advent	Dom. Let. (old)	Luna 14 (old)	Easter (old)	D i ff .
4 8	j								
1 7 4 9	25 Mai j	5 Iunij	12	26	30 Nou.	A	25 M	26 M	0
1 7 5 0	17 Mai j	28 Maij	13	27	29 Nou.	g	13 A	15 A	2 8
1 7 5 1	30 Mai j	10 Iunij	14	25	28 Nou.	f	2 A	7 A	7
1 7 5 2	21 Mai j	1 Maij [recte: 1 Iunij]	15	27	3 Dec.	e d	22 M	29 M	7
1 7 5 3	10 Iuni j	21 Iunij	1	24	2 Dec.	c	10 A	11 A	0
1 7 5 4	2 Iuni j	13 Iunij	2	25	1 Dec.	b	30 M	3 A	0
1 7 5 5	18 Mai j	29 Iunij [recte: 29 Maij]	3	27	30 Nou.	A	18 A	23 A	3 5
1 7 5	6 Iuni j	17 Iunij	4	24	28 Nou.	g f	7 A	14 A	7

A . D .	Pen teco st	Corpus Christi	In di ct.	Sun. aft. Pent.	1st Sun. Advent	Dom. Let. (old)	Luna 14 (old)	Easter (old)	D i ff .
6									
1 7 5 7	29 Mai j	9 Iunij	5	25	27 Nou.	e	27 M	30 M	0
1 7 5 8	14 Mai j	25 Maij	6	28	3 Dec.	d	15 A	19 A	3 5
1 7 5 9	3 Iuni j	14 Iunij	7	25	2 Dec.	c	4 A	11 A	7
1 7 6 0	25 Mai j	5 Iunij	8	26	30 Nou.	b A	24 M	26 M	0
1 7 6 1	10 Mai j	21 Maij	9	28	29 Nou.	g	12 A	15 A	3 5
1 7 6 2	30 Mai j	10 Iunij	10	25	28 Nou.	f	1 A	7 A	7
1 7 6 3	22 Mai j	2 Iunij	11	26	27 Nou.	e	21 M	23 M	0
1 7 6 4	10 Iuni j	21 Iunij	12	24	2 Dec.	d c	9 A	11 A	0

A	Pen		In			Dom.	Luna		D
D	teco		di	Sun. aft.	1st Sun.	Let.	14	Easter	i
.	st	Corpus Christi	ct.	Pent.	Advent	(old)	(old)	(old)	ff
1	26	6 Iunij	13	26	1 Dec.	b	29 M	3 A	7
7	Mai								
6	j								
5									
1	18	29 Maij	14	27	30 Nou.	A	17 A	23 A	3
7	Mai								5
6	j								
6									
1	7	18 Iunij	15	24	29 Nou.	g	5 A	8 A	0
7	Iuni								
6	j								
7									

[New-calendar leaf — folio 386] CALEND. GREG. — TABVLA
FESTORVM [MOBILIVM TEMPORARIA]

Columns as in folio 384.

A				Lu		Ash		
D	Ep	Dom.	Full Moon	na	Septua	We	Easter	
.	act	Let.	(D. H.)	14	gesima	d.	(new)	Ascension
1	xj	c b	1. 17 A	2 A	31 Ian.	17	3 A	12 Maij
7						Feb.		
6								
8								
1	xx	A	22. 1 M	22	22 Ian.	8	26 M	4 Maij
7	ij			M		Feb.		
6								
9								
1	iiij	g	9. 23 A	10	11 Feb.	28	15 A	24 Maij
7				A		Feb.		
7								
0								

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Ascension
1 7 7 1	xii ij	f	30. 8 M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
1 7 7 2	xx v	e d	17. 5 A	18 A	16 Feb.	4 Mar .	19 A	28 Maij
1 7 7 3	vj	c	6. 14 A	7 A	7 Feb.	24 Feb.	11 A	20 Maij
1 7 7 4	xv ij	b	26. 23 M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
1 7 7 5	xx vii j	A	14. 21 A	15 A	12 Feb.	1 Mar .	16 A	25 Maij
1 7 7 6	ix	g f	3. 5 A	4 A	4 Feb.	21 Feb.	7 A	16 Maij
1 7 7 7	xx	e	23. 14 M	24 M	26 Ian.	12 Feb.	30 M	8 Maij
1 7 7 8	j	d	11. 12 A	12 A	15 Feb.	4 Mar .	19 A	28 Maij
1	xij	c	31. 21 M	1 A	31 Ian.	17	4 A	13 Maij

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Ascension
7						Feb.		
7								
9								
1	xx	b A	20. 5 M	21	23 Ian.	9	26 M	4 Maij
7	iiij			M		Feb.		
8								
0								
1	iiij	g	8. 3 A	9 A	11 Feb.	28	15 A	24 Maij
7						Feb.		
8								
1								
1	xv	f	28. 12 M	29	27 Ian.	13	31 M	9 Maij
7				M		Feb.		
8								
2								
1	xx	e	16. 9 A	17	16 Feb.	5	20 A	29 Maij
7	vj			A		Mar		
8						.		
3								
1	vij	d c	4. 18 A	6 A	8 Feb.	25	11 A	20 Maij
7						Feb.		
8								
4								
1	xv	b	25. 3 M	26	23 Ian.	9	27 M	5 Maij
7	iiij			M		Feb.		
8								
5								
1	*	A	13. 0 A	13	12 Feb.	1	16 A	25 Maij
7				A		Mar		
8						.		
6								
1	xj	g	2. 9 A	2 A	4 Feb.	21	8 A	17 Maij
7						Feb.		

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Ascension
8								
7								
1	xx	f e	21. 18 M	22	20 Ian.	6	23 M	1 Maij
7	ij			M		Feb.		
8								
8								
1	iiij	d	9. 16 A	10	8 Feb.	25	12 A	21 Maij
7				A		Feb.		
8								
9								
1	xii	c	30. 0 M	30	31 Ian.	17	4 A	13 Maij
7	ij			M		Feb.		
9								
0								
1	xx	b	17. 22 A	18	20 Feb.	9	24 A	3 Iunij [recte: 2
7	v			A		Mar		Iunij]
9						.		
1								
1	vj	A g	6. 7 A	7 A	5 Feb.	22	8 A	17 Maij
7						Feb.		
9								
2								
1	xv	f	26. 16 M	27	27 Ian.	13	31 M	9 Maij
7	ij			M		Feb.		
9								
3								
1	xx	e	14. 13 A	15	16 Feb.	5	20 A	29 Maij
7	vii			A		Mar		
9	j					.		
4								
1	ix	d	3. 22 A	4 A	1 Feb.	18	5 A	14 Maij
7						Feb.		
9								

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Ascension
5								
1 7 9 6	xx	c b	22. 7 M	24 M	24 Ian.	10 Feb.	27 M	5 Maij
1 7 9 7	j	A	11. 4 A	12 A	12 Feb.	1 Mar .	16 A	25 Maij
1 7 9 8	xij	g	31. 13 M	1 A	4 Feb.	21 Feb.	8 A	17 Maij
1 7 9 9	xx iij	f	20. 22 M	21 M	20 Ian.	6 Feb.	24 M	2 Maij
1 8 0 0	iiij	e	9. 19 A	9 A	9 Feb.	26 Feb.	13 A	22 Maij
1 8 0 1	xv	d	29. 4 M	29 M	1 Feb.	18 Feb.	5 A	14 Maij
1 8 0 2	xx vi	c	17. 2 A	17 A	14 Feb.	3 Mar .	18 A	27 Maij
1 8 0 3	vij	b	6. 11 A	6 A	6 Feb.	23 Feb.	10 A	19 Maij

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Ascension
1 8 0 4	xv ij	A g	25. 19 M	26 M	29 Ian.	15 Feb.	1 A	10 Maij
1 8 0 5	*	f	13. 17 A	13 A	10 Feb.	27 Feb.	14 A	23 Maij
1 8 0 6	xj	e	3. 2 A	2 A	2 Feb.	19 Feb.	6 A	15 Maij
1 8 0 7	xx ij	d	23. 11 M	22 M	25 Ian.	11 Feb.	29 M	7 Maij
1 8 0 8	ijj	c b	10. 8 A	10 A	14 Feb.	2 Mar .	17 A	26 Maij
1 8 0 9	xii ij	A	30. 17 M	30 M	29 Ian.	15 Feb.	2 A	11 Maij
1 8 1 0	xx v	g	18. 14 A	18 A	18 Feb.	7 Mar .	22 A	31 Maij
1 8 1 1	vj	f	7. 23 A	7 A	10 Feb.	27 Feb.	14 A	23 Maij
1	xv	e d	27. 8 M	27	26 Ian.	12	29 M	7 Maij

A . D .	Ep act	Dom. Let.	Full Moon (D. H.)	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Ascension
8 1 2	ij			M		Feb.		
1 8 1 3	xx vii j	c	15. 6 A	15 A	14 Feb.	3 Mar .	18 A	27 Maij
1 8 1 4	ix	b	4. 14 A	4 A	6 Feb.	23 Feb.	10 A	19 Maij
1 8 1 5	xx	A	24. 23 M	24 M	22 Ian.	8 Feb.	26 M	4 Maij
1 8 1 6	j	g f	11. 21 A	12 A	11 Feb.	28 Feb.	14 A	23 Maij
1 8 1 7	xij	e	1. 6 A	1 A	2 Feb.	19 Feb.	6 A	15 Maij
1 8 1 8	xx iij	d	21. 14 M	21 M	18 Ian.	4 Feb.	22 M	30 Apr.
1 8 1 9	iiij	c	9. 12 A	9 A	7 Feb.	24 Feb.	11 A	20 Maij
1 8	xv	b A	28. 21 M	29 M	30 Ian.	16 Feb.	2 A	11 Maij

A								
.	Ep	Dom.	Full Moon	Lu	Septua	Ash	Easter	
D	act	Let.	(D. H.)	na	gesima	We	(new)	Ascension
.				14		d.		
2								
0								
1	xx	g	16. 18 A	17	18 Feb.	7	22 A	31 Maij
8	vj			A		Mar		
2						.		
1								
1	vij	f	6. 3 A	6 A	3 Feb.	20	7 A	16 Maij
8						Feb.		
2								
2								
1	xv	e	26. 12 M	26	26 Ian.	12	30 M	8 Maij
8	ijj			M		Feb.		
2								
3								

Caput XXII. — *Table of the Movable Feasts, computed for a time (1600–5000)*
(continued).

The table runs as paired leaves: a *new-Calendar* (Gregorian) leaf headed **CALEND. GREG.** — **TABVLA FESTORVM**, and an *old-Calendar* (Julian, *veteris*) leaf headed **CAPVT XXII.** — **MOBILIVM TEMPORARIA**. On the old-Calendar leaf the first five columns (Pentecost, Corpus Christi, Indiction, Sundays after Pentecost, First Sunday of Advent) continue the Gregorian reckoning begun on the facing new-Calendar leaf; the last four columns (dominical letter, Moon 14, Easter, and the difference) give the Julian reckoning.

Abbreviations in the cells: month names as printed — Ian. = January, Febr. = February, Mart. = March, Maij = May, Iunij = June, Nou. = November, Dec. = December. In the lunar and Easter columns the trailing letter is the month: **M** = March (*Martij*), **A** = April (*Aprilis*). The epact * is the asterisk sort (epact 30, new-Calendar form). Two dominical letters mark a leap year. The final column, *Dies quibus Pascha Calendarii novi à Paschate Calendarii veteris differt*, gives the number of days by which the new-Calendar Easter differs from the old-Calendar Easter (values 0, 7, 28, or 35).

[Old-Calendar leaf — printed folio 388; running header "CAPVT XXII. / MOBILIVM TEMPORARIA."] Years 1768–1823

A.D.	Pe nte cos t	Corpu s Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f .
1768	22 Ma ij	2 Iunij	1	26	27 Nou.	f e	25 M	30 M	7
1769	14 Ma ij	25 Iunij	2	28	3 Dec.	d	13 A	19 A	3 5
1770	3 Iun ij	14 Iunij	3	25	2 Dec.	c	2 A	4 A	0
1771	19 Ma ij	30 Maij	4	27	1 Dec.	b	22 M	27 M	7
1672 [recte: 1772]	7 Iun ij	18 Iunij	5	24	29 Nou.	A g	10 A	15 A	7
1773	30 Ma ij	10 Iunij	6	25	28 Nou.	f	30 M	31 M	0
1774	22 Ma ij	2 Iunij	7	26	27 Nou.	e	18 A	20 A	2 8
1775	4 Iun ij	15 Iunij	8	25	3 Dec.	d	7 A	12 A	7
1776	26 Ma ij	6 Iunij	9	26	1 Dec.	c b	27 M	3 A	7
1777	18 Ma	29 Maij	10	27	30 Nou.	A	15 A	16 A	2 8

A.D.	Pe nte cos t	Corpu s Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f .
1778	ij 7 Iun	18 Iunij	11	24	29 Nou.	g	4 A	8 A	0
1779	ij 23 Ma	3 Iunij	12	26	28 Nou.	f	24 M	31 M	7
1780	ij 14 Ma	25 Maij	13	28	3 Dec.	e d	12 A	19 A	3 5
1781	ij 3 Iun	14 Iunij	14	25	2 Dec.	c	1 A	4 A	0
1782	ij 19 Ma	30 Maij	15	27	1 Dec.	b	21 M	27 M	7
1783	ij 8 Iun	19 Iunij	1	24	30 Nou.	A	9 A	16 A	7
1784	ij 30 Ma	10 Iunij	2	25	28 Nou.	g f	29 M	31 M	0
1785	ij 15 Ma	26 Maij	3	27	27 Nou.	e	17 A	20 A	3 5
1786	ij 4 Iun	15 Iunij	4	25	3 Dec.	d	5 A	12 A	7
1787	ij 27 Ma	7 Iunij	5	26	2 Dec.	c	25 M	28 M	0
	ij								

A.D.	Pe nte cos t	Corpu s Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f .
1788	11 Ma ij	22 Maij	6	28	30 Nou.	b A	13 A	16 A	3 5
1789	31 Ma ij	13 Iunij	7	25	29 Nou.	g	2 A	8 A	7
1790	23 Ma ij	3 Iunij	8	26	28 Nou.	f	22 M	24 M	0
1791	12 Iun ij	23 Iunij	9	23	27 Nou.	e	10 A	13 A	0
1792	27 Ma ij	7 Iunij	10	26	2 Dec.	d c	30 M	4 A	7
1793	19 Ma ij	30 Maij	11	27	1 Dec.	b	18 A	24 A	3 5
1794	8 Iun ij	19 Iunij	12	24	30 Nou.	A	7 A	9 A	0
1795	24 Ma ij	4 Iunij	13	26	29 Nou.	g	27 M	1 A	7
1796	15 Ma ij	26 Maij	14	27	27 Nou.	f e	15 A	20 A	3 5
1797	4 Iun ij	15 Iunij	15	25	3 Dec.	d	4 A	5 A	0
1798	27 Ma	7 Iunij	1	26	2 Dec.	c	24 M	28 M	0

A.D.	Pe nte cos t	Corpu s Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f .
1799	ij 12 Ma ij	23 Maij	2	28	1 Dec.	b	12 A	17 A	3 5
1800	ij 1 Iun ij	12 Iunij	3	25	30 Nou.	A g	1 A	8 A	7
1801	ij 24 Ma ij	4 Iunij	4	26	29 Nou.	f	21 M	24 M	0
1802	ij 6 Iun ij	17 Iunij	5	24	28 Nou.	e	9 A	13 A	7
1803	ij 29 Ma ij	9 Iunij	6	25	27 Nou.	d	29 M	5 A	7
1804	ij 20 Ma ij	31 Maij	7	27	2 Dec.	c b	17 A	24 A	3 5
1805	ij 2 Iun ij	13 Iunij	8	25	1 Dec.	A	5 A	9 A	7
1806	ij 25 Ma ij	5 Iunij	9	26	30 Nou.	g	25 M	1 A	7
1807	ij 17 Ma ij	28 Maij	10	27	29 Nou.	f	13 A	14 A	2 8
1808	ij 5 Iun ij	16 Iunij	11	24	27 Nou.	e d	2 A	5 A	0

A.D.	Pe nte cos t	Corpu s Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f .
1809	21 Ma ij	1 Iunij	12	27	3 Dec.	c	22 M	28 M	7
1810	10 Iun ij	21 Iunij	13	24	2 Dec.	b	10 A	17 A	7
1811	2 Iun ij	13 Iunij	14	25	1 Dec.	A	30 M	2 A	0
1812	17 Ma ij	28 Maij	15	27	29 Nou.	g f	18 A	21 A	3 5
1813	6 Iun ij	17 Iunij	1	24	28 Nou.	e	7 A	13 A	7
1814	29 Ma ij	9 Iunij	2	25	27 Nou.	d	27 M	29 M	0
1815	14 Ma ij	25 Maij	3	28	3 Dec.	c	15 A	18 A	3 5
1816	2 Iun ij	13 Iunij	4	25	1 Dec.	b A	4 A	9 A	7
1817	25 Ma ij	5 Iunij	5	26	30 Nou.	g	24 M	25 M	0
1818	10 Ma ij	21 Maij	6	28	29 Nou.	f	12 A	14 A	3 5
1819	30 Ma	10	7	25	28 Nou.	e	1 A	6 A	7

A.D.	Pe nte cos t	Corpu s Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f .
	ij	Iunij							
1820	21 Ma ij	1 Iunij	8	27	3 Dec.	d c	21 M	28 M	7
1821	10 Iun ij	21 Iunij	9	24	2 Dec.	b	9 A	10 A	0
1822	26 Ma ij	6 Iunij	10	26	1 Dec.	A	29 M	2 A	7
1823	18 Ma ij	29 Maij	11	27	30 Nou.	g	17 A	22 A	3 5

[New-Calendar leaf — printed folio 338; running header "CALEND. GREG. / TABVLA FESTORVM."] Years 1824–1879

Mean full moon column is *D. H.* + month (day · hour · March/April).

A . D . .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
1 8 2 4	1	*	d c	13. 9 A	13 A	15 Febr.	3 Mart.	18 A	27 Mai j
1 8 2 5	2	xi	b	2. 18 A	2 A	30 Ian.	16 Febr.	3 A	12 Mai j
1 8	3	x xi	A	23. 3 M	22 M	22 Ian.	8 Febr.	26 M	4 Mai

A D .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
2 6		i							j
1 8 2 7	4	iii	g	11. 1 A	10 A	11 Febr.	28 Febr.	15 A	24 Mai j
1 8 2 8	5	xi iii	f e	30. 9 M	30 M	3 Febr.	20 Febr.	6 A	15 Mai j
1 8 2 9	6	x x v	d	18. 7 A	18 A	15 Febr.	4 Mart.	19 A	28 Mai j
1 8 3 0	7	vi	c	7. 16 A	7 A	7 Febr.	24 Febr.	11 A	20 Mai j
1 8 3 1	8	x vi i	b	28. 1 M	27 M	30 Ian.	16 Febr.	3 A	12 Mai j
1 8 3 2	9	x x vi ii	A g	14. 22 A	15 A	19 Febr.	7 Mart.	22 A	31 Mai j
1 8 3 3	10	ix	f	4. 7 A	4 A	3 Febr.	20 Febr.	7 A	16 Mai j
1 8 3	11	x x	e	24. 16 M	24 M	26 Ian.	12 Febr.	30 M	8 Mai j

A D .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
4									
1 8 3 5	12	i	d	12. 13 A	12 A	15 Febr.	4 Mart.	19 A	28 Mai j
1 8 3 6	13	xi i	c b	31. 22 M	1 A	31 Ian.	17 Febr.	3 A	12 Mai j
1 8 3 7	14	x xi ii	A	21. 7 M	21 M	22 Ian.	8 Febr.	26 M	4 Mai j
1 8 3 8	15	iii i	g	9. 4 A	9 A	11 Febr.	28 Febr.	15 A	24 Mai j
1 8 3 9	16	x v	f	29. 13 M	29 M	27 Ian.	13 Febr.	31 M	9 Mai j
1 8 4 0	17	x x vi	e d	16. 11 A	17 A	16 Febr.	4 Mart.	19 A	28 Mai j
1 8 4 1	18	vi i	c	5. 20 A	6 A	7 Febr.	24 Febr.	11 A	20 Mai j
1 8 4 2	19	x vi ii	b	26. 4 M	26 M	23 Ian.	9 Febr.	27 M	5 Mai j

A D .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
1 8 4 3	1	*	A	14. 2 A	13 A	12 Febr.	1 Mart.	16 A	25 Mai j
1 8 4 4	2	xi	g f	2. 11 A	2 A	4 Febr.	21 Febr.	7 A	16 Mai j
1 8 4 5	3	x xi i	e	22. 20 M	22 M	19 Ian.	5 Febr.	23 M	1 Mai j
1 8 4 6	4	iii	d	10. 17 A	10 A	8 Febr.	25 Febr.	12 A	21 Mai j
1 8 4 7	5	xi iii	c	31. 2 M	30 M	31 Ian.	17 Febr.	4 A	13 Mai j
1 8 4 8	6	x x v	b A	18. 0 A	18 A	20 Febr.	8 Mart.	23 A	1 Iun ij
1 8 4 9	7	vi	g	7. 8 A	7 A	4 Febr.	21 Febr.	8 A	17 Mai j
1 8 5 0	8	x vi i	f	27. 17 M	27 M	27 Ian.	13 Febr.	31 M	9 Mai j
1	9	x	e	15. 15 A	15 A	16	5	20 A	29

A D .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
8 5 1		x vi ii				Febr.	Mart.		Mai j
1 8 5 2	10	ix	d c	3. 23 A	4 A	8 Febr.	25 Febr.	11 A	20 Mai j
1 8 5 3	11	x x	b	24. 8 M	24 M	23 Ian.	9 Febr.	27 M	5 Mai j
1 8 5 4	12	i	A	12. 6 A	12 A	12 Febr.	1 Mart.	16 A	25 Mai j
1 8 5 5	13	xi i	g	1. 15 A	1 A	4 Febr.	21 Febr.	8 A	17 Mai j
1 8 5 6	14	x xi ii	f e	20. 23 M	21 M	20 Ian.	6 Febr.	23 M	1 Mai j
1 8 5 7	15	iii i	d	8. 21 A	9 A	8 Febr.	25 Febr.	12 A	21 Mai j
1 8 5 8	16	x v	c	29. 6 M	29 M	31 Ian.	17 Febr.	4 A	13 Mai j
1 8	17	x x	b	17. 3 A	17 A	20 Febr.	9 Mart.	24 A	2 Jun

A D .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
5 9		vi							ij
1 8 6 0	18	vi i	A g	5. 12 A	6 A	5 Febr.	22 Febr.	8 A	17 Mai j
1 8 6 1	19	x vi ii	f	25. 21 M	26 M	27 Ian.	13 Febr.	31 M	9 Mai j
1 8 6 2	1	*	e	13. 19 A	13 A	16 Febr.	5 Mart.	20 A	29 Mai j
1 8 6 3	2	xi	d	3. 3 A	2 A	1 Febr.	18 Febr.	5 A	14 Mai j
1 8 6 4	3	x xi i	c b	22. 12 M	22 M	24 Ian.	10 Febr.	27 M	5 Mai j
1 8 6 5	4	iii	A	10. 10 A	10 A	12 Febr.	1 Mart.	16 A	25 Mai j
1 8 6 6	5	xi iii	g	30. 19 M	30 M	28 Ian.	14 Febr.	1 A	10 Mai j
1 8 6	6	x x v	f	18. 16 A	18 A	17 Febr.	6 Mart.	21 A	30 Mai j

A D .	Gol d. no.	E p a ct	Dom. letter (Greg.)	Mean full moon (D. H. mo.)	Moon 14 (Greg.)	Septu agesi ma	Ash Wedn esday	Easte r (new)	Asc ensi on
7									
1 8 6 8	7	vi	[?] d	7. 1 A	7 A	9 Febr.	26 Febr.	12 A	21 Mai j
1 8 6 9	8	x vi i	c	27. 10 M	27 M	24 Ian.	10 Febr.	28 M	6 Mai j
1 8 7 0	9	x x vi ii	b	15. 7 A	15 A	13 Febr.	2 Mart.	17 A	26 Mai j
1 8 7 1	10	ix	A	4. 16 A	4 A	5 Febr.	22 Febr.	9 A	18 Mai j
1 8 7 2	11	x x	g f	24. 1 M	24 M	28 Ian.	14 Febr.	31 M	9 Mai j
1 8 7 3	12	i	e	11. 22 A	12 A	9 Febr.	26 Febr.	13 A	22 Mai j
1 8 7 4	13	xi i	d	1. 7 A	1 A	1 Febr.	18 Febr.	5 A	14 Mai j
1 8 7 5	14	x xi ii	c	21. 16 M	21 M	24 Ian.	10 Febr.	28 M	6 Mai j

[Old-Calendar leaf — printed folio 389; running header "CAPVT XXI. / MOBILIVM TEMPORARIA."] Years 1824–1879

[illegible]

A	Pen	Corpus	In	Sund.		Dom.	Moon		D
D	teco	Christi	di	after	1st Sund. of	letter	14	Easte	i
.	st		ct.	Pent.	Advent	(old)	(old)	r (old)	ff
1	22	2 Iunij	13	26	27 Dec. [recte:	d	25 M	29 M	7
8	Mai				27 Nou.]				
2	j								
5									
1	14	25 Maij	14	28	3 Dec.	c	13 A	18 A	3
8	Mai								5
2	j								
6									
1	3	14	15	25	2 Dec.	b	2 A	3 A	0
8	Iuni	Iunij							
2	j								
7									
1	25	5 Iunij	1	26	30 Nou.	A g	22 M	25 M	0
8	Mai								
2	j								
8									
1	7	18	2	24	29 Nou.	f	10 A	14 A	7
8	Iuni	Iunij							
2	j								
9									
1	30	10	3	25	28 Nou.	e	30 M	6 A	7
8	Mai	Iunij							
3	j								
0									
1	22	2 Iunij	4	26	27 Nou.	d	18 A	19 A	2
8	Mai								8
3	j								
1									
1	10	21	5	24	2 Dec.	c b	7 A	10 A	0
8	Iuni	Iunij							
3	j								
2									
1	26	6 Iunij	6	26	1 Dec.	A	27 M	2 A	7

A	Pen		In	Sund.		Dom.	Moon		D
D	teco	Corpus	di	after	1st Sund. of	letter	14	Easte	i
.	st	Christi	ct.	Pent.	Advent	(old)	(old)	r (old)	ff
8	Mai								f.
3	j								
3									
1	18	29 Maij	7	27	30 Nou.	g	15 A	22 A	3
8	Mai								5
3	j								
4									
1	7	18	8	24	29 Nou.	f	4 A	7 A	0
8	Iuni	Iunij							
3	j								
5									
1	22	2 Iunij	9	26	27 Nou.	e d	24 M	29 M	7
8	Mai								
3	j								
6									
1	14	25 Maij	10	28	3 Dec.	c	12 A	18 A	3
8	Mai								5
3	j								
7									
1	3	14	11	25	2 Dec.	b	1 A	3 A	0
8	Iuni	Iunij							
3	j								
8									
1	19	30 Maij	12	27	1 Dec.	A	21 M	26 M	7
8	Mai								
3	j								
9									
1	7	18	13	24	29 Nou.	g f	9 A	14 A	7
8	Iuni	Iunij							
4	j								
0									
1	30	10	14	25	28 Nou.	e	29 M	30 M	0
8	Mai	Iunij							

A D . .	Pen teco st	Corpus Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f.
4 1	j								
1 8 4 2	15 Mai j	26 Maij	15	27	27 Nou.	d	17 A	19 A	3 5
1 8 4 3	4 Iuni j	15 Iunij	1	25	3 Dec.	c	5 A	11 A	7
1 8 4 4	26 Mai j	6 Iunij	2	26	1 Dec.	b A	25 M	26 M	0
1 8 4 5	11 Mai j	22 Maij	3	28	30 Nou.	g	13 A	15 A	3 5
1 8 4 6	31 Mai j	11 Iunij	4	25	29 Nou.	f	2 A	7 A	7
1 8 4 7	23 Mai j	3 Iunij	5	26	28 Nou.	e	22 M	23 M	0
1 8 4 8	11 Iuni j	22 Iunij	6	24	3 Dec.	d c	10 A	11 A	0
1 8 4	27 Mai j	7 Iunij	7	26	2 Dec.	b	30 M	3 A	7

A	Pen		In	Sund.		Dom.	Moon		D
. D .	teco st	Corpus Christi	di ct.	after Pent.	1st Sund. of Advent	letter (old)	14 (old)	Easte r (old)	i ff f.
9									
1 8 5 0	19 Mai j	30 Maij	8	27	1 Dec.	A	18 A	23 A	3 5
1 8 5 1	8 Iuni j	19 Iunij	9	24	30 Nou.	g	7 A	8 A	0
1 8 5 2	30 Mai j	10 Iunij	10	25	28 Nou.	f e	27 M	30 M	0
1 8 5 3	15 Mai j	26 Maij	11	27	27 Nou.	d	15 A	19 A	3 5
1 8 5 4	4 Iuni j	15 Iunij	12	25	3 Dec.	c	4 A	11 A	7
1 8 5 5	27 Mai j	7 Iunij	13	26	2 Dec.	b	24 M	27 M	0
1 8 5 6	11 Mai j	22 Maij	14	28	30 Nou.	A g	12 A	15 A	3 5
1 8 5 7	31 Mai j	11 Iunij	15	25	29 Nou.	f	1 A	7 A	7

A . . .	Pen D teco st	Corpus Christi	In di ct.	Sund. after Pent.	1st Sund. of Advent	Dom. letter (old)	Moon 14 (old)	Easte r (old)	D i ff f.
1 23 8 Mai 5 j 8	3 Iunij	1	26	28 Nou.	e	21 M	23 M	0	
1 12 8 Iuni 5 j 9	23 Iunij	2	23	27 Nou.	d	9 A	12 A	0	
1 27 8 Mai 6 j 0	7 Iunij	3	26	2 Dec.	c b	29 M	3 A	7	
1 19 8 Mai 6 j 1	30 Maij	4	27	1 Dec.	A	17 A	23 A	3 5	
1 8 8 Iuni 6 j 2	19 Maij	5	24	30 Nou.	g	5 A	8 A	0	
1 24 8 Mai 6 j 3	4 Iunij	6	26	29 Nou.	f	25 M	31 M	7	
1 15 8 Mai 6 j 4	26 Maij	7	27	27 Nou.	e d	13 A	19 A	3 5	
1 4 8 Iuni 6 j 5	15 Iunij	8	25	3 Dec.	c	2 A	4 A	0	
1 20	31 Maij	9	27	2 Dec.	b	22 M	27 M	7	

A	Pen	Corpus	In	Sund.		Dom.	Moon		D
D	teco	Christi	di	after	1st Sund. of	letter	14	Easte	i
.	st		ct.	Pent.	Advent	(old)	(old)	r (old)	ff
.									f.
8	Mai								
6	j								
6									
1	9	20	10	24	1 Dec.	A	10 A	16 A	7
8	Iuni	Iunij							
6	j								
7									
1	31	11	11	25	29 Nou.	g f	30 M	31 M	0
8	Mai	Iunij							
6	j								
8									
1	16	27 Maij	12	27	28 Nou.	e	18 A	20 A	3
8	Mai								5
6	j								
9									
1	5	16	13	24	27 Nou.	d	7 A	12 A	7
8	Iuni	Iunij							
7	j								
0									
1	28	8 Iunij	14	26	3 Dec.	c	27 M	28 M	0
8	Mai								
7	j								
1									
1	19	30 Maij	15	27	1 Dec.	b A	15 A	16 A	2
8	Mai								8
7	j								
2									
1	1	12	1	25	30 Nou.	g	4 A	8 A	7
8	Iuni	Iunij							
7	j								
3									
1	14	4 Iunij	2	26	29 Nou.	f	24 M	31 M	7
8	Mai								

A	Pen		In	Sund.		Dom.	Moon		D
D	teco	Corpus	di	after	1st Sund. of	letter	14	Easte	i
.	st	Christi	ct.	Pent.	Advent	(old)	(old)	r (old)	ff
7	j								f.
4									
1	16	27 Maij	3	27	28 Nou.	e	12 A	13 A	2
8	Mai								8
7	j								
5									
1	4	15	4	25	3 Dec.	d c	1 A	4 A	0
8	Iuni	Iunij							
7	j								
6									
1	20	31 Maij	5	27	2 Dec.	b	21 M	27 M	7
8	Mai								
7	j								
7									
1	9	20	6	24	1 Dec.	A	9 A	16 A	7
8	Iuni	Iunij							
7	j								
8									
1	1	12	7	25	30 Nou.	g	29 M	1 A	0
8	Iuni	Iunij							
7	j								
9									

Caput XXII — Table of the Movable Feasts, arranged by year (continued)

The paired new-calendar (Gregorian) and old-calendar (Julian, *veteris*) leaves continue, covering A.D. 1880–1991.

Column legend. In the mean-full-moon, Luna 14, and Easter columns, the letter after the figure is the month: **M** = **Martij (March)**, **A** = **Aprilis (April)**. The mean full moon is given as *day · hour · month* (the hour sub-column is the smallest type on the page and is the least certain reading on these leaves). Explicit month abbreviations elsewhere: **Ian.** = January, **Feb.** = February, **Mar.** = March, **Maij** =

May, **Iunij** = June, **Nou.** = November, **Dec.** = December. The epact-30 asterisk is rendered * as printed. Roman-numeral and Arabic-numeral epacts are transcribed exactly as set (note in particular the Arabic **25** at 1954 and 1973, where the surrounding cycle is Roman). Two dominical letters mark a leap year.

Leaf 1 — New Calendar (*Calend. Greg.*), A.D. 1880–1935

Columns: **A.D.** | **Golden No.** [*Aur. Num.*] | **Epact** [*Epacta*] | **Dom. letter(s)** [*Literæ Dominicales Calend. Greg.*] | **Mean full moon** [*Plenilunia media Cal. Gregor., D·H·mo*] | **Luna 14** [*Lunæ xiiij Cal. Greg.*] | **Septuagesima** | **Ash Wednesday** [*Dies Cinerum*] | **Easter (new)** [*Pascha Calend. noui*] | **Ascension** [*Ascensio Domini*]

A.	G.	Epact	D o	Mean full moon	Luna 14	Septuagesima	Ash Wed.	Easter	Ascension
1880	1	xvii	d	25·14 M	26 M	25 Ian.	11 Feb.	28 M	6 Maij
1881	1	*	b	13·11 A	13 A	13 Feb.	2 Mar.	17 A	26 Maij
1882	2	xj	A	2·20 A	2 A	5 Feb.	22 Feb.	9 A	18 Maij
1883	3	xxij	g	23·5 M	22 M	21 Ian.	7 Feb.	25 M	3 Maij
1884	4	iiij	f e	10·2 A	10 A	10 Feb.	27 Feb.	13 A	22 Maij
1885	5	xiiiij	d	30·11 M	30 M	1 Feb.	18 Feb.	5 A	14 Maij

A. D .	G. N .	Epa ct	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
8 5 1 8 8 6	6	xxv	c	18·8 A	18 A	21 Feb.	10 Mar.	25 A	3 Iunij
1 8 8 7	7	vj	b	7·17 A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
1 8 8 8	8	xvij	A g	27·2 M	27 M	29 Ian.	15 Feb.	1 A	10 Maij
1 8 8 9	9	xxv iij	f	15·0 A	15 A	17 Feb.	6 Mar.	21 A	30 Maij
1 8 9 0	1 0	ix	e	4·9 A	4 A	2 Feb.	19 Feb.	6 A	15 Maij
1 8 9 1	1 1	xx	d	24·17 M	24 M	25 Ian.	11 Feb.	29 M	7 Maij
1 8 9 2	1 2	j	c b	11·15 A	12 A	14 Feb.	2 Mar.	17 A	26 Maij
1 8 9	1 3	xij	A	1·0 A	1 A	29 Ian.	15 Feb.	2 A	11 Maij

A. D .	G. N .	Epa ct	D o m	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
3									
1 8 9 4	1 4	xxii j	g	21·9 M	21 M	21 Ian.	7 Feb.	25 M	3 Maij
1 8 9 5	1 5	iiiij	f	9·6 A	9 A	10 Feb.	27 Feb.	14 A	23 Maij
1 8 9 6	1 6	xv	e d	28·15 M	29 M	2 Feb.	19 Feb.	5 A	14 Maij
1 8 9 7	1 7	xxv j	c	16·12 A	17 A	14 Feb.	3 Mar.	18 A	27 Maij
1 8 9 8	1 8	vij	b	5·21 A	6 A	6 Feb.	23 Feb.	10 A	19 Maij
1 8 9 9	1 9	xvii j	A	26·6 M	26 M	29 Ian.	15 Feb.	2 A	11 Maij
1 9 0 0	1	xxi x	g	15·4 A	14 A	11 Feb.	28 Feb.	15 A	24 Maij
1 9 0 1	2	x	f	3·12 A	3 A	3 Feb.	20 Feb.	7 A	16 Maij

A. D .	G. N .	Epa ct	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
1 9 0 2	3	xxj	e	23·21 M	23 M	26 Ian.	12 Feb.	30 M	8 Maij
1 9 0 3	4	ij	d	11·19 A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
1 9 0 4	5	xijj	c b	31·4 M	31 M	31 Ian.	17 Feb.	3 A	12 Maij
1 9 0 5	6	xxii ij	A	19·1 A	18 A	19 Feb.	8 Mar.	23 A	1 Iunij
1 9 0 6	7	v	g	8·10 A	8 A	11 Feb.	28 Feb.	15 A	24 Maij
1 9 0 7	8	xvj	f	28·19 M	28 M	27 Ian.	13 Feb.	31 M	9 Maij
1 9 0 8	9	xxv ij	e d	15·16 A	16 A	16 Feb.	4 Mar.	19 A	28 Maij
1 9 0 9	1 0	viiij	c	5·1 A	5 A	7 Feb.	24 Feb.	11 A	20 Maij
1	1	xix	b	25·10 M	25 M	23 Ian.	9 Feb.	27	5 Maij

A. D .	G. N .	Epa ct	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
9 1 0	1							M	
1 9 1 1	1 2	*	A	13·7 A	13 A	12 Feb.	1 Mar.	16 A	25 Maij
1 9 1 2	1 3	xj	g f	1·16 A	2 A	4 Feb.	21 Feb.	7 A	16 Maij
1 9 1 3	1 4	xxij	e	22·1 M	22 M	19 Ian.	5 Feb.	23 M	1 Maij
1 9 1 4	1 5	iiij	d	9·23 A	10 A	8 Feb.	25 Feb.	12 A	21 Maij
1 9 1 5	1 6	xiiiij	c	30·7 M	30 M	31 Iun. [recte: Ian.]	17 Feb.	4 A	13 Maij
1 9 1 6	1 7	xxv	b A	17·5 A	17 A	20 Feb.	8 Mar.	23 A	1 Iunij
1 9 1 7	1 8	vj	g	6·14 A	7 A	4 Feb.	21 Feb.	8 A	17 Maij
1 9 9	1 9	xvij	f	26·23 M	27 M	27 Ian.	13 Feb.	31 M	9 Maij

A. D. .	G. N. .	Epa ct .	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
1 8									
1 9 1 9	1	xxi x	e	14·20 A	14 A	16 Feb.	5 Mar.	20 A	29 Maij
1 9 2 0	2	x	d c	3·5 A	3 A	1 Feb.	18 Feb.	4 A	13 Maij
1 9 2 1	3	xxj	b	23·14 M	23 M	23 Ian.	9 Feb.	27 M	5 Maij
1 9 2 2	4	ij	A	11·11 A	11 A	12 Feb.	1 Mar.	16 A	25 Maij
1 9 2 3	5	xiiij	g	31·20 M	31 M	28 Ian.	14 Feb.	1 A	10 Maij
1 9 2 4	6	xxii ij	f e	18·18 A	18 A	17 Feb.	5 Mar.	20 A	29 Maij
1 9 2 5	7	v	d	8·2 A	8 A	8 Feb.	25 Feb.	12 A	21 Maij
1 9 2	8	xvj	c	28·11 M	28 M	31 Ian.	17 Feb.	4 A	13 Maij

A. D .	G. N .	Epa ct	D o m	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
6									
1 9 2 7	9	xxv ij	b	16·9 A	16 A	13 Feb.	2 Mar.	17 A	26 Maij
1 9 2 8	1 0	viiij	A g	4·18 A	5 A	5 Feb.	22 Feb.	8 A	17 Maij
1 9 2 9	1 1	xxi x	f	25·2 M	25 M	27 Ian.	13 Feb.	31 M	9 Maij
1 9 3 0	1 2	*	e	13·0 A	13 A	16 Feb.	5 Mar.	20 A	29 Maij
1 9 3 1	1 3	xj	d	2·9 A	2 A	1 Feb.	18 Feb.	5 A	14 Maij
1 9 3 2	1 4	xxij	c b	21·18 M	22 M	24 Ian.	10 Feb.	27 M	5 Maij
1 9 3 3	1 5	iiij	A	9·15 A	10 A	11 Feb.	1 Mar.	16 A	25 Maij
1 9 3 4	1 6	xiiiij	g	30·0 M	30 M	28 Ian.	14 Feb.	1 A	10 Mai

A. D.	G. N.	D. Epact	Month	Mean full moon	Luna 14	Septuagesima	Ash Wed.	Easter	Ascension
1935	1	xxv	Feb.	17·22 A	17 A	17 Feb.	6 Mar.	21 A	30 Maij

Columns: **A.D.** | **Pentecost** [*Pentecoste*] | **Corpus Christi** [*Corpus Domini*] | **Indiction** [*Indictio*] | **Sundays after Pentecost** [*Dnīcæ post Pentecosten*] | **First Sunday of Advent** [*Dominica prima Aduentus*] | **Dom. letter(s), old cal.** [*Literæ Dominicales Calend. veteris*] | **Luna 14, old cal.** [*Lunæ xiiij Calend. veteris*] | **Easter (old)** [*Pascha Calendarij veteris*] | **Diff.** [*Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt* — days by which new-calendar Easter differs from old-calendar Easter]

A . . .	Pen . . .	Corpus Christi	I n . . .	Sun. aft. Pent.	1st Sun. Advent	Dom . . .	Luna 14 (old)	Easter (old)	D i ff .
1 8 8 4	1 1 Iuni j	12 Iunij	1 2	25	30 Nou.	A g	2 A	8 A	7
1 8 8 5	1 24 8 Maij	4 Iunij	1 3	26	29 Nou.	f	22 M	24 M	0
1 8 8 6	1 13 8 Iuni j	24 Iunij	1 4	23	28 Nou.	e	10 A	13 A	0
1 8 8 7	1 29 8 Maij	9 Iunij	1 5	25	27 Nou.	d	30 M	5 A	7
1 8 8 8	1 20 8 Maij	31 Maij	1	27	2 Dec.	c b	18 A	24 A	3 5
1 8 8 9	1 9 8 Iuni j	20 Iunij	2	24	1 Dec.	A	7 A	9 A	0
1 8 9 0	1 25 8 Maij	5 Iunij	3	26	30 Nou.	g	27 M	1 A	7
1 8 9 1	1 17 8 Maij	28 Maij	4	27	29 Nou.	f	15 A	21 A	3 5
1	1 5	16 Iunij	5	24	27 Nou.	e d	4 A	5 A	0

A . D .	Pen teco st	Corpus Christi	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom . (old)	Luna 14 (old)	Easter (old)	D i ff .
8 9 2	Iuni j								
1 8 9 3	21 Maij	1 Iunij	6	27	3 Dec.	c	24 M	28 M	7
1 8 9 4	13 Maij	24 Maij	7	28	2 Dec.	b	12 A	17 A	3 5
1 8 9 5	2 Iuni j	13 Iunij	8	25	1 Dec.	A	1 A	2 A	0
1 8 9 6	24 Maij	4 Iunij	9	26	29 Nou.	g f	21 M	24 M	0
1 8 9 7	6 Iuni j	17 Iunij	1 0	24	28 Nou.	e	9 A	13 A	7
1 8 9 8	29 Maij	9 Iunij	1 1	25	27 Nou.	d	29 M	5 A	7
1 8 9 9	21 Maij	1 Iunij	1 2	27	3 Dec.	c	17 A	18 A	2 8
1 9	3 Iuni	14 Iunij	1 3	25	2 Dec.	b A	5 A	9 A	7

A . . .	Pen teco st	Corpus Christi	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom . (old)	Luna 14 (old)	Easter (old)	D i ff .
0 0	j								
1 9 0 1	26 Maij	6 Iunij	1 4	26	1 Dec.	g	25 M	1 A	7
1 9 0 2	18 Maij	29 Maij	1 5	27	30 Nou.	f	13 A	14 A	2 8
1 9 0 3	31 Maij	11 Iunij	1	25	29 Nou.	e	2 A	6 A	7
1 9 0 4	22 Maij	2 Iunij	2	26	27 Nou.	d c	22 M	28 M	7
1 9 0 5	11 Iuni j	22 Iunij	3	24	3 Dec.	b	10 A	7 A	7
1 9 0 6	3 Iuni j	14 Iunij	4	25	2 Dec.	A	30 M	12 A [recte: 2 A]	0
1 9 0 7	19 Maij	30 Maij	5	27	1 Dec.	g	18 A	22 A	3 5
1 9 0	7 Iuni j	18 Iunij	6	24	29 Nou.	f e	7 A	13 A	7

A . D .	Pen teco st	Corpus Christi	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom . (old)	Luna 14 (old)	Easter (old)	D i ff .
8									
1 30 9 Maij 0 9	10 Iunij		7 25	28 Nou.	d	27 M	29 M	0	
1 15 9 Maij 1 0	26 Maij		8 27	27 Nou.	c	15 A	18 A	3 5	
1 4 9 Iuni 1 j 1	15 Iunij		9 25	3 Dec.	b	4 A	10 A	7	
1 26 9 Maij 1 2	6 Iunij		1 26 0	1 Dec.	A g	24 M	25 M	0	
1 11 9 Maij 1 3	22 Maij		1 28 1	30 Nou.	f	12 A	14 A	3 5	
1 31 9 Maij 1 4	11 Iunij		1 25 2	29 Nou.	e	1 A	6 A	7	
1 23 9 Maij 1 5	3 Iunij		1 26 3	28 Nou.	d	21 M	22 M	0	
1 11 9 Iuni 1 j 6	22 Iunij		1 24 4	3 Dec.	c b	9 A	10 A	0	

A . . .	Pen teco st	Corpus Christi	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom . (old)	Luna 14 (old)	Easter (old)	D i ff .
1 9 1 7	27 Maij	7 Iunij	1 5	26	2 Dec.	A	29 M	2 A	7
1 9 1 8	19 Maij	30 Maij	1	27	1 Dec.	g	17 A	22 A	3 5
1 9 1 9	8 Iuni j	19 Iunij	2	24	30 Nou.	f	5 A	7 A	0
1 9 2 0	23 Maij	3 Iunij	3	26	28 Nou.	e d	25 M	29 M	7
1 9 2 1	15 Maij	26 Maij	4	27	27 Nou.	c	13 A	18 A	3 5
1 9 2 2	4 Iuni j	15 Iunij	5	25	3 Dec.	b	2 A	3 A	0
1 9 2 3	20 Maij	31 Maij	6	27	2 Dec.	A	22 M	26 M	7
1 9 2 4	8 Iuni j	19 Iunij	7	24	30 Nou.	g f	10 A	14 A	7
1	31	11 Iunij	8	25	29 Nou.	e	30 M	6 A	7

A . . .	Pen teco st	Corpus Christi	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom . (old)	Luna 14 (old)	Easter (old)	D i ff .
9 2 5	Maij								
1 9 2 6	23 Maij	3 Iunij	9	26	28 Nou.	d	18 A	19 A	2 8
1 9 2 7	5 Iuni j	16 Iunij	1 0	24	27 Nou.	c	7 A	11 A	7
1 9 2 8	27 Maij	7 Iunij	1 1	26	2 Dec.	b A	27 M	2 A	7
1 9 2 9	19 Maij	30 Maij	1 2	27	1 Dec.	g	15 A	22 A	3 5
1 9 3 0	8 Iuni j	19 Iunij	1 3	24	30 Nou.	f	4 A	7 A	0
1 9 3 1	24 Maij	24 Maij [recte: 4 Iunij]	1 4	26	29 Nou.	e	24 M	30 M	7
1 9 3 2	15 Maij	26 Maij	1 5	27	27 Nou.	d c	12 A	18 A	3 5
1 9	4 Iuni	15 Iunij	1	25	3 Dec.	b	1 A	3 A	0

A . D .	Pen teco st	Corpus Christi	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom . (old)	Luna 14 (old)	Easter (old)	D i ff .
3 3	j								
1 9 3 4	20 Maij	31 Maij	2	27	2 Dec.	A	21 M	26 M	7
1 9 3 5	9 Iuni	20 Iuni	3	24	1 Dec.	g	9 A	15 A	7

Columns as in Leaf 1.

A. D.	G. N.	D. Epact	Month	Mean full moon	Luna 14	Septuagesima	Ash Wed.	Easter	Ascension
1936	18	vj	e	6·6 A	7 A	9 Feb.	26 Feb.	12 A	21 Maij
1937	19	xvij	c	26·15 M	27 M	24 Ian.	10 Feb.	28 M	6 Maij
1938	1	xxi	b	14·13 A	14 A	13 Feb.	2 Mar.	17 A	26 Maij
1939	2	x	A	3·22 A	3 A	5 Feb.	22 Feb.	9 A	18 Maij

A. D .	G. N .	Epa ct	D o m	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
9									
1 9 4 0	3	xxj	g f	23·6 M	23 M	21 Ian.	7 Feb.	24 M	2 Maij
1 9 4 1	4	ij	e	11·4 A	11 A	10 Feb.	27 Feb.	13 A	22 Maij
1 9 4 2	5	xiiij	d	31·13 M	31 M	1 Feb.	18 Feb.	5 A	14 Maij
1 9 4 3	6	xxii ij	c	19·10 A	18 A	21 Feb.	10 Mar.	25 A	3 Iunij
1 9 4 4	7	v	b A	7·19 A	8 A	6 Feb.	23 Feb.	9 A	18 Maij
1 9 4 5	8	xvj	g	28·4 M	28 M	28 Ian.	14 Feb.	1 A	10 Maij
1 9 4 6	9	xxv ij	f	16·1 A	16 A	17 Feb.	6 Mar.	21 A	30 Maij
1 9 4 7	1 0	viiij	e	5·10 A	5 A	2 Feb.	19 Feb.	6 A	15 Maij

A. D .	G. N .	Epa ct	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
1 9 4 8	1 1	xix	d c	24·19 M	25 M	25 Ian.	11 Feb.	28 M	6 Maij
1 9 4 9	1 2	*	b	12·17 A	13 A	13 Feb.	2 Mar.	17 A	26 Maij
1 9 5 0	1 3	xj	A	2·1 A	2 A	5 Feb.	22 Feb.	9 A	18 Maij
1 9 5 1	1 4	xxij	g	22·10 M	22 M	21 Ian.	7 Feb.	25 M	3 Maij
1 9 5 2	1 5	iiij	f e	9·8 A	10 A	10 Feb.	27 Feb.	13 A	22 Maij
1 9 5 3	1 6	xiiiij	d	29·17 M	30 M	1 Feb.	18 Feb.	5 A	14 Maij
1 9 5 4	1 7	25	c	17·14 A	17 A	14 Feb.	3 Mar.	18 A	27 Maij
1 9 5 5	1 8	vj	b	6·23 A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
1	1	xvij	A	26·8 M	27 M	29 Ian.	15	1 A	10

A. D .	G. N .	Epa ct	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
9 5 6	9		g				Feb.		Maij
1 9 5 7	1	xxi x	f	14·5 A	14 A	17 Feb.	6 Mar.	21 A	30 Maij
1 9 5 8	2	x	e	3·14 A	3 A	2 Feb.	19 Feb.	6 A	15 Maij
1 9 5 9	3	xxj	d	23·23 M	23 M	25 Ian.	11 Feb.	29 M	7 Maij
1 9 6 0	4	ij	c b	10·20 A	11 A	14 Feb.	2 Mar.	17 A	26 Maij
1 9 6 1	5	xiiij	A	31·5 M	31 M	29 Ian.	15 Feb.	2 A	11 Maij
1 9 6 2	6	xxii ij	g	19·3 A	18 A	18 Feb.	7 Mar.	22 A	31 Maij
1 9 6 3	7	v	f	8·12 A	8 A	10 Feb.	27 Feb.	14 A	23 Maij
1 9	8	xvj	e d	27·20 M	28 M	26 Ian.	12 Feb.	29 M	7 Maij

A. D .	G. N .	Epa ct	D o m	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
6 4									
1 9 6 5	9	xxv ij	c	15·18 A	16 A	14 Feb.	3 Mar.	18 A	27 Maij
1 9 6 6	1 0	viiij	b	5·3 A	5 A	6 Feb.	23 Feb.	10 A	19 Maij
1 9 6 7	1 1	xix	A	25·12 M	25 M	22 Ian.	8 Feb.	26 M	4 Maij
1 9 6 8	1 2	*	g f	12·9 A	13 A	11 Feb.	28 Feb.	14 A	23 Maij
1 9 6 9	1 3	xj	e	1·18 A	2 A	2 Feb.	19 Feb.	6 A	15 Maij
1 9 7 0	1 4	xxij	d	22·3 M	22 M	25 Ian.	11 Feb.	29 M	7 Maij
1 9 7 1	1 5	iiij	c	10·0 A	10 A	7 Feb.	24 Feb.	11 A	20 Maij
1 9 7	1 6	xiiiij	b A	29·9 M	30 M	30 Ian.	16 Feb.	2 A	11 Maij

A. D .	G. N .	Epa ct	D o m	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
2									
1 9 7 3	1 7	25	g	17·7 A	17 A	18 Feb.	7 Mar.	22 A	31 Maij
1 9 7 4	1 8	vj	f	6·15 A	7 A	10 Feb.	27 Feb.	14 A	23 Maij
1 9 7 5	1 9	xvij	e	27·0 M	27 M	26 Ian.	12 Feb.	30 M	8 Maij
1 9 7 6	1	xxi x	d c	13·22 A	14 A	15 Feb.	3 Mar.	18 A	27 Maij
1 9 7 7	2	x	b	3·7 A	3 A	6 Feb.	23 Feb.	10 A	19 Maij
1 9 7 8	3	xxj	A	23·15 M	23 M	22 Ian.	8 Feb.	26 M	4 Maij
1 9 7 9	4	ij	g	11·13 A	11 A	11 Feb.	28 Feb.	15 A	24 Maij
1 9 8 0	5	xiiij	f e	30·22 M	31 M	3 Feb.	20 Feb.	6 A	15 Maij

A. D .	G. N .	Epa ct	D o m .	Mean full moon	Lun a 14	Septuagesima	Ash Wed.	Eas ter	Ascens ion
1 9 8 1	6	xxii ij	d	18·19 A	18 A	15 Feb.	4 Mar.	19 A	28 Maij
1 9 8 2	7	v	c	8·4 A	8 A	7 Feb.	24 Feb.	11 A	20 Maij
1 9 8 3	8	xvj	b	28·13 M	28 M	30 Iun. [recte: Ian.]	16 Feb.	3 A	12 Maij
1 9 8 4	9	xxv ij	A g	15·10 A	16 A	19 Feb.	7 Mar.	22 A	31 Maij
1 9 8 5	1 0	viii	f	4·19 A	5 A	3 Feb.	20 Feb.	7 A	16 Maij
1 9 8 6	1 1	xix	e	25·4 M	25 M	26 Ian.	12 Feb.	30 M	8 Maij
1 9 8 7	1 2	*	d	13·2 A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
1 9 8 8	1 3	xj	c b	1·10 A	2 A	31 Ian.	17 Feb.	3 A	12 Maij
1	1	xxij	A	21·19 M	22 M	22 Ian.	8 Feb.	26	4 Maij

A.	G.	D		Mean full	Lun	Septuagesima	Ash	Eas	Ascens
D	N	Epa	m	moon	a 14		Wed.	ter	ion
.	.	ct	.						
9	4							M	
8									
9									
1	1	iiij	g	9·17 A	10 A	11 Feb.	28	15	24
9	5						Feb.	A	Maij
9									
0									
1	1	xiiiij	f	30·2 M	30 M	27 Ian.	13	31	9 Maij
9	6						Feb.	M	
9									
1									

Caput XXII — *Tabula Festorum Mobilium Temporaria* (continued)

The paired new-/old-calendar leaves of the perpetual table of movable feasts continue. This opening carries three leaves: an old-calendar (*veteris*) feast leaf for 1936–1991 (the mate of the new-calendar leaf that closed the preceding folio), then a matched pair for 1992–2047 — the new-calendar leaf followed by its old-calendar feast leaf.

Column legend (old-calendar / feast leaves — folios 393, 395). A.D. year · Pentecost (Gregorian) · Corpus Christi (Gregorian) · Indiction · Sundays after Pentecost · First Sunday of Advent (Gregorian) · Dominical letter(s) of the old calendar (two in leap years) · Luna 14 of the old calendar · Easter of the old calendar (*Pascha veteris*) · number of days by which new-calendar Easter differs from old-calendar Easter (*Diff.*). Month abbreviations as printed: **Maij** = May, **Iunij** = June, **Nou.** = November, **Dec.** = December. In the Luna-14 and Easter columns, the trailing **M** = Martij (March), **A** = Aprilis (April).

Column legend (new-calendar leaf — folio 394). A.D. year · golden number (*Aureus Numerus*) · Epact · Dominical letter(s) of the Gregorian calendar · mean full moon of the Gregorian calendar, given as day·hour·(month) (*Plenilunia media*, columns **D. H.**) · Luna 14 of the Gregorian calendar · Septuagesima · Ash Wednesday (*Dies Cinerum*) · Easter of the new calendar (*Pascha noui*) · Ascension. Month abbreviations as printed: **Ian.** = January, **Febr.** = February, **Mart.** = March, **Maij** = May, **Iunij** = June; trailing **M** = March, **A** = April. Epact printed * = the new-

calendar sign for epact 30. Epacts printed as Arabic 25 (golden-number-17 rows) are transcribed as printed, distinct from Roman xxv.

Old-calendar feast leaf — folio 393 (A.D. 1936–1991)

Title (spanning the opening): TABVLA FESTORVM · MOBILIVM TEMPORARIA.

A.D.	Pen tec ost	Corpus Christi	I n d p. Pent.	Sund.	Adv entu s I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff
1936	31 Mai j	11 Iunij	4	25	29 Nou.	f e	29 M	30 M	0
1937	16 Mai j	27 Maij	5	27	28 Nou.	d	17 A	19 A	3 5
1938	5 Iun ij	16 Iunij	6	24	27 Nou.	c	5 A	11 A	7
1939	28 Mai j	8 Iunij	7	26	3 Dec.	b	25 M	27 M	0
1940	12 Mai j	23 Maij	8	28	1 Dec.	A g	13 A	15 A	3 5
1941	1 Iun ij	12 Iunij	9	25	30 Nou.	f	2 A	7 A	7
1942	24 Mai j	4 Iunij	1 0	26	29 Nou.	e	22 M	23 M	0
1943	13 Iun ij	24 Iunij	1 1	23	28 Nou.	d	10 A	12 A	0
1944	28 Mai j	8 Iunij	1 2	26	3 Dec.	c b	30 M	3 A	7

A.D.	Pen tec ost	Corpus Christi	I n d . p. Pent.	Sund. p. Pent.	Adv entu s I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff f.
1945	20 Mai j	31 Maij	1 27 3		2 Dec.	A	18 A	23 A	3 5
1946	9 Iun ij	20 Iunij	1 24 4		1 Dec.	g	7 A	8 A	0
1947	25 Mai j	5 Iunij	1 26 5		30 Nou.	f	27 M	31 M	7
1948	16 Mai j	27 Maij	1 27		28 Nou.	e d	15 A	19 A	3 5
1949	5 Iun ij	16 Iunij	2 24		27 Nou.	c	4 A	11 A	7
1950	28 Mai j	8 Iunij	3 26		3 Dec.	b	24 M	27 M	0
1951	13 Mai j	24 Maij	4 28		2 Dec.	A	12 A	16 A	3 5
1952	1 Iun ij	12 Iunij	5 25		30 Nou.	g f	1 A	7 A	7
1953	24 Mai j	4 Iunij	6 26		29 Nou.	e	21 M	23 M	0
1954	6 Iun ij	17 Iunij	7 24		28 Nou.	d	9 A	12 A	7

A.D.	Pen tec ost	Corpus Christi	I n d . p.	Sund. Pent.	Adv entu s I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff f.
1955	29 Mai j	9 Iunij	8	25	27 Nou.	c	29 M	4 A	7
1956	20 Mai j	31 Maij	9	27	2 Dec.	b A	17 A	23 A	3 5
1957	9 Iun ij	20 Iunij	1 0	24	1 Dec.	g	5 A	8 A	0
1958	25 Mai j	5 Iunij	1 1	26	30 Nou.	f	25 M	31 M	7
1959	17 Mai j	28 Maij	1 2	27	29 Nou.	e	13 A	20 A	3 5
1960	5 Iun ij	16 Iunij	1 3	24	27 Nou.	d c	2 A	4 A	0
1961	21 Mai j	1 Iunij	1 4	27	3 Dec.	b	22 M	27 M	7
1962	10 Iun ij	21 Iunij	1 5	24	2 Dec.	A	10 A	16 A	7
1963	2 Iun ij	13 Iunij	1	25	1 Dec.	g	30 M	1 A	0
1964	17 Mai j	28 Maij	2	27	29 Nou.	f e	18 A	20 A	3 5

A.D.	Pen tec ost	Corpus Christi	I n d . p. Pent.	Sund. p. Pent.	Adv entu s I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff f.
1965	6 Iun ij	17 Iunij	3	24	28 Nou.	d	7 A	12 A	7
1966	29 Mai j	9 Iunij	4	25	27 Nou.	c	27 M	28 M	0
1967	14 Mai j	25 Maij	5	28	3 Dec.	b	15 A	17 A	3 5
1968	2 Iun ij	13 Iunij	6	25	1 Dec.	A g	4 A	8 A	7
1969	25 Mai j	5 Iunij	7	26	30 Nou.	f	24 M	31 M	7
1970	17 Mai j	28 Maij	8	27	29 Nou.	e	12 A	13 A	2 8
1971	30 Mai j	10 Iunij	9	25	28 Nou.	d	1 A	5 A	7
1972 [recte: 1972; printed 1172]	21 Mai j	1 Iunij	1 0	27	3 Dec.	c b	21 M	27 M	7
1973	10 Iun ij	21 Iunij	1 1	24	2 Dec.	A	9 A	16 A	7
1974	2 Iun ij	13 Iunij	1 2	25	1 Dec.	g	29 M	1 A	0

A.D.	Pen tec ost	Corpus Christi	I n d . p. Pent.	Sund. p. Pent.	Adv entu s I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff f.
1975	18 Mai j	29 Maij	1 3	27	30 Nou.	f	17 A	21 A	3 5
1976	6 Iun ij	17 Iunij	1 4	24	28 Nou.	e d	5 A	12 A	7
1977	29 Mai j	9 Iunij	1 5	25	27 Nou.	c	25 M	28 M	0
1978	14 Mai j	25 Maij	1	28	3 Dec.	b	13 A	17 A	3 5
1979	3 Iun ij	14 Iunij	2	25	2 Dec.	A	2 A	9 A	7
1980	25 Mai j	5 Iunij	3	26	30 Nou.	g f	22 M	24 M	0
1981	7 Iun ij	18 Iunij	4	24	29 Nou.	e	10 A	13 A	7
1982	30 Mai j	10 Iunij	5	25	28 Nou.	d	30 M	5 A	7
1983	22 Mai j	2 Iunij	6	26	27 Nou.	c	18 A	25 A	3 5
1984	10 Iun ij	21 Iunij	7	24	2 Dec.	b A	7 A	9 A	0

A.D.	Pen tec ost	Corpus Christi	I n d Sund. p. Pent.	Adv entu s I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff f.
1985	26 Mai j	6 Iunij	8 26	1 Dec.	g	27 M	1 A	7
1986	18 Mai j	29 Maij	9 27	30 Nou.	f	15 A	21 A	3 5
1987	7 Iun ij	18 Iunij	1 24 0	29 Nou.	e	4 A	6 A	0
1988	22 Mai j	2 Iunij	1 26 1	27 Nou.	d c	24 M	28 M	7
1989	14 Mai j	25 Maij	1 28 2	3 Dec.	b	12 A	17 A	3 5
1990	3 Iun ij	14 Iunij	1 25 3	2 Dec.	A	1 A	2 A	0
1991	19 Mai j	30 Maij	1 27 4	1 Dec.	g	21 M	25 M	7

New-calendar leaf — folio 394 (A.D. 1992–2047)

Title (spanning the opening): TABVLA · FESTORVM

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
1 9 9 2	17	25	e d	16·23 A	17 A	16 Febr.	4 Mart.	19 A	28 Maij

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
1 9 9 3	18	vi	c	6·8 A	7 A	7 Febr.	24 Febr.	11 A	20 Maij
1 9 9 4	19	x vi i	b	26·17 M	27 M	30 Ian.	16 Febr.	3 A	12 Maij
1 9 9 5	1	x xi x	A	14·14 A	14 A	12 Febr.	1 Mart.	16 A	25 Maij
1 9 9 6	2	x	g f	2·23 A	3 A	4 Febr.	21 Febr.	7 A	16 Maij
1 9 9 7	3	x xi	e	23·8 M	23 M	26 Ian.	12 Febr.	30 M	8 Maij
1 9 9 8	4	ii	d	11·5 A	11 A	8 Febr.	25 Febr.	12 A	21 Maij
1 9 9 9	5	xi ii	c	31·14 M	31 M	31 Ian.	17 Febr.	4 A	13 Maij
2 0 0 0	6	x xi iii	b A	18·12 A	18 A	20 Febr.	8 Mart.	23 A	1 Iuni j
2	7	v	g	7·21 A	8 A	11	28	15 A	24

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
0 0 1						Febr.	Febr.		Maij
2 0 0 2	8	x vi	f	28·5 M	28 M	27 Ian.	13 Febr.	31 M	9 Maij
2 0 0 3	9	x x vi i	e	16·3 A	16 A	17 Febr.	5 Mart.	20 A	29 Maij
2 0 0 4	10	vi ii	d c	4·21 A	5 A	8 Febr.	25 Febr.	11 A	20 Maij
2 0 0 5	11	xi x	b	24·21 M	25 M	23 Ian.	9 Febr.	27 M	5 Maij
2 0 0 6	12	*	A	12·18 A	13 A	12 Febr.	1 Mart.	16 A	25 Maij
2 0 0 7	13	xi	g	2·3 A	2 A	4 Febr.	21 Febr.	8 A	17 Maij
2 0 0 8	14	x xi i	f e	21·12 M	22 M	20 Ian.	6 Febr.	23 M	1 Maij
2 0	15	iii	d	9·9 A	10 A	8 Febr.	25 Febr.	12 A	21 Maij

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
0 9									
2 0 1 0	16	xi iii	c	29·18 M	30 M	31 Ian.	17 Febr.	4 A	13 Maij
2 0 1 1	17	25	b	17·16 A	17 A	20 Febr.	9 Mart.	24 A	2 Iuni j
2 0 1 2	18	vi	A g	6·1 A	7 A	5 Febr.	22 Febr.	8 A	17 Maij
2 0 1 3	19	x vi i	f	26·9 M	27 M	27 Ian.	13 Febr.	31 M	9 Maij
2 0 1 4	1	x xi x	e	14·7 A	14 A	16 Febr.	5 Mart.	20 A	29 Maij
2 0 1 5	2	x	d	3·16 A	3 A	1 Febr.	18 Febr.	5 A	14 Maij
2 0 1 6	3	x xi	c b	23·0 M	23 M	24 Ian.	10 Febr.	27 M	5 Maij
2 0 1	4	ii	A	10·2 A	11 A	12 Febr.	1 Mart.	16 A	25 Maij

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
7									
2 0 1 8	5	xi ii	g	31·7 M	31 M	28 Ian.	14 Febr.	1 A	10 Maij
2 0 1 9	6	x xi iii	f	19·4 A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
2 0 2 0	7	v	e d	7·13 A	8 A	9 Febr.	26 Febr.	12 A	21 Maij
2 0 2 1	8	x vi	c	27·22 M	28 M	31 Ian.	17 Febr.	4 A	13 Maij
2 0 2 2	9	x x vi i	b	15·20 A	16 A	13 Febr.	2 Mart.	17 A	26 Maij
2 0 2 3	10	vi ii	A	5·4 A	5 A	5 Febr.	22 Febr.	9 A	18 Maij
2 0 2 4	11	xi x	g f	24·13 M	25 M	28 Ian.	14 Febr.	31 M	9 Maij
2 0 2 5	12	*	e	12·11 A	13 A	16 Febr.	5 Mart.	20 A	29 Maij

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
2 0 2 6	13	xi	d	1·20 A	2 A	1 Febr.	18 Febr.	5 A	14 Maij
2 0 2 7	14	x xi i	c	22·4 M	22 M	24 Ian.	10 Febr.	28 M	6 Maij
2 0 2 8	15	iii	b A	9·2 A	10 A	13 Febr.	1 Mart.	16 A	25 Maij
2 0 2 9	16	xi iii	g	29·11 M	30 M	28 Ian.	14 Febr.	1 A	10 Maij
2 0 3 0	17	25	f	17·8 A	17 A	17 Febr.	6 Mart.	21 A	30 Maij
2 0 3 1	18	vi	e	6·17 A	7 A	9 Febr.	26 Febr.	13 A	22 Maij
2 0 3 2	19	x vi i	d c	26·2 M [day: 26?]	27 M	25 Ian.	11 Febr.	28 M	6 Maij
2 0 3 3	1	x xi x	b	13·23 A	14 A	13 Febr.	2 Mart.	17 A	26 Maij
2	2	x	A	2·8 A	3 A	5	22	9 A	18

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
0 3 4						Febr.	Febr.		Maij
2 0 3 5	3	x xi	g	23·17 M	23 M	21 Ian.	7 Febr.	25 M	3 Maij
2 0 3 6	4	ii	f e	10·15 A	11 A	10 Febr.	27 Febr.	13 A	22 Maij
2 0 3 7	5	xi ii	d	30·23 M	31 M	1 Febr.	18 Febr.	5 A	14 Maij
2 0 3 8	6	x xi iii	c	18·21 A	18 A	21 Febr.	10 Mart.	25 A	3 Iuni j
2 0 3 9	7	v	b	8·6 A	8 A	6 Febr.	23 Febr.	10 A	19 Maij
2 0 4 0	8	x vi	A g	27·15 M	28 M	19 Ian.	15 Febr.	1 A	10 Maij
2 0 4 1	9	x x vi i	f	15·12 A	16 A	17 Febr.	6 Mart.	21 A	30 Maij
2 0	10	vi ii	e	4·21 A	5 A	2 Febr.	19 Febr.	6 A	15 Maij

A D .	Aur. Nu m.	E p ac t	Dom. lit. (Greg.)	Full moon D·H	Luna 14 (Greg.)	Septu agesi ma	Dies Ciner um	Easter (new)	Asce nsio n
4									
2									
0	11	xi x	d	25·6 M	25 M	25 Ian.	11 Febr.	29 M	7 Maij
4									
3									
2	12	* c	b	12·3 A	13 A	14 Febr.	2 Mart.	17 A	26 Maij
0									
4									
4									
2	13	xi A		1·12 A	2 A	5 Febr.	22 Febr.	9 A	18 Maij
0									
4									
5									
2	14	x xi i	g	21·21 M	22 M	21 Ian.	7 Febr.	25 M	3 Maij
0									
4									
6									
2	15	iii	f	9·18 A	10 A	10 Febr.	27 Febr.	14 A	23 Maij
0									
4									
7									

Old-calendar feast leaf — folio 395 (A.D. 1992–2047)

Title (spanning the opening): TABVLA FESTORVM · MOBILIVM TEMPORARIA.

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. p. Pent.	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
1	7	18 Iunij	1	24	29	f e	9 A	13 A	7
9	Iuni		5		Nou.				
9	j								

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. Pent.	p. I	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
2										
1 9 9 3	30 Maij	10 Iunij	1	25		28 Nou.	d	29 M	5 A	7
1 9 4	22 Maij	2 Iunij	2	26		27 Nou.	c	17 A	18 A	2 8
1 9 5	4 Iuni j	15 Iunij	3	25		3 Dec.	b	5 A	10 A	7
1 9 6	26 Maij	6 Iunij	4	26		1 Dec.	A g	25 M	1 A	7
1 9 7	18 Maij	29 Maij	5	27		30 Nou.	f	13 A	14 A	2 8
1 9 8	31 Maij	11 Iunij	6	25		29 Nou.	e	2 A	6 A	7
1 9 9	23 Maij	3 Iunij	7	26		28 Nou.	d	22 M	29 M	7
2 0 0 0	11 Iuni j	22 Iunij	8	24		3 Dec.	c b	10 A	17 A	7

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. Pent.	p. I	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
2 0 0 1	3 Iuni j	14 Iunij	9	25	2	A Dec.		30 M	2 A	0
2 0 0 2	19 Maij	30 Maij	1 0	27	1 Dec.	g		18 A	22 A	3 5
2 0 0 3	8 Iuni j	19 Iunij	1 1	24	30 Nou.	f		7 A	14 A	7
2 0 0 4	30 Maij	10 Iunij	1 2	25	28 Nou.	e d		27 M	29 M	0
2 0 0 5	15 Maij	26 Maij	1 3	27	27 Nou.	c		15 A	18 A	3 5
2 0 0 6	4 Iuni j	15 Iunij	1 4	25	3 Dec.	b		4 A	10 A	7
2 0 0 7	27 Maij	7 Iunij	1 5	26	2 Dec.	A		24 M	26 M	0
2 0 0 8	11 Maij	22 Maij	1	28	30 Nou.	g f		12 A	14 A	3 5
2	31	11 Iunij	2	25	29	e		1 A	6 A	7

A Pent Decos t	Corpus Christi	I n d Sund. p. Pent.	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
0 0 9	Maij		Nou.				
2 0 1 0	23 Maij	3 26	28 Nou.	d	21 M	22 M	0
2 0 1 1	12 Iuni j	4 23	27 Nou.	c	9 A	11 A	0
2 0 1 2	27 Maij	5 26	2 Dec.	b A	29 M	2 A	7
2 0 1 3	19 Maij	6 27	1 Dec.	g	17 A	22 A	3 5
2 0 1 4	8 Iuni j	7 24	30 Nou.	f	5 A	7 A	0
2 0 1 5	24 Maij	8 26	29 Nou.	e	25 M	30 M	7
2 0 1 6	15 Maij	9 27	27 Nou.	d c	13 A	18 A	3 5
2 0	4 Iuni	1 25 0	3 Dec.	b	2 A	3 A	0

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. p. Pent.	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
1 7	j								
2 0 1 8	20 Maij	31 Maij	1 1	27	2 Dec.	A	22 M	26 M	7
2 0 1 9	9 Iuni j	20 Iunij	1 2	24	1 Dec.	g	10 A	15 A	7
2 0 2 0	31 Maij	11 Iunij	1 3	25	29 Nou.	f e	30 M	6 A	7
2 0 2 1	23 Maij	3 Iunij	1 4	26	28 Nou.	d	18 A	19 A	2 8
2 0 2 2	5 Iuni j	16 Iunij	1 5	24	27 Nou.	c	7 A	11 A	7
2 0 2 3	28 Maij	8 Iunij	1	26	3 Dec.	b	27 M	3 A	7
2 0 2 4	19 Maij	30 Iunij [recte: 30 Maij]	2	27	1 Dec.	A g	15 A	22 A	3 5
2 0 2 5	8 Iuni j	19 Iunij	3	24	30 Nou.	f	4 A	7 A	0

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. p. Pent.	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
5									
2 0 2 6	24 Maij	4 Iunij	4	26	29 Nou.	e	24 M	30 M	7
2 0 2 7	16 Maij	27 Maij	5	27	28 Nou.	d	12 A	19 A	3 5
2 0 2 8	4 Iuni j	15 Iunij	6	25	3 Dec.	c b	1 A	3 A	0
2 0 2 9	20 Maij	31 Maij	7	27	2 Dec.	A	21 M	26 M	7
2 0 3 0	9 Iuni j	20 Iunij	8	24	1 Dec.	g	9 A	15 A	7
2 0 3 1	1 Iuni j	12 Iunij	9	25	30 Nou.	f	29 M	31 M	0
2 0 3 2	16 Maij	27 Maij	1 0	27	28 Nou.	e d	17 A	19 A	3 5
2 0 3 3	5 Iuni j	16 Iunij	1 1	24	27 Nou.	c	5 A	11 A	7

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. Pent.	p. I	Adve ntus Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
2 0 3 4	28 Maij	8 Iunij	1 2	26	3 Dec.	b	25 M	27 M	0
2 0 3 5	13 Maij	24 Maij	1 3	28	2 Dec.	A	13 A	16 A	3 5
2 0 3 6	1 Iuni j	12 Iunij	1 4	25	30 Nou.	g f	2 A	7 A	7
2 0 3 7	24 Maij	4 Iunij	1 5	26	29 Nou.	e	22 M	23 M	0
2 0 3 8	13 Iuni j	24 Iunij	1	23	28 Nou.	d	10 A	12 A	0
2 0 3 9	29 Maij	9 Iunij	2	25	27 Nou.	c	30 M	4 A	7
2 0 4 0	20 Maij	31 Maij	3	27	2 Dec.	b A	18 A	23 A	3 5
2 0 4 1	9 Iuni j	20 Iunij	4	24	1 Dec.	g	7 A	8 A	0
2	25	5 Iunij	5	26	30	f	27 M	31 M	7

A D .	Pent ecos t	Corpus Christi	I n d .	Sund. p. Pent.	Adve ntus I	Dom. lit. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
0 4 2	Maij				Nou.				
2 0 4 3	17 Maij	28 Maij	6	27	29 Nou.	e	15 A	20 A	3 5
2 0 4 4	5 Iuni j	16 Iunij	7	24	27 Nou.	d c	4 A	11 A	7
2 0 4 5	28 Maij	8 Iunij	8	26	3 Dec.	b	24 M	27 M	0
2 0 4 6	13 Maij	24 Maij	9	28	2 Dec.	A	12 A	16 A	3 5
2 0 4 7	2 Iuni j	13 Iunij	1 0	25	1 Dec.	g	1 A	8 A	7

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (1600–5000), continued

The table continues from year 2048. Each opening pairs a **new-calendar (Gregorian)** left leaf with the **old-calendar (veteris, Julian)** columns that complete it. In the moon and Easter columns the single letter **M** = *Martius* (March) and **A** = *Aprilis* (April); it is the month indicator, printed as a distinct sort. Roman-numeral epacts are transcribed as printed (epact 25 is set in Arabic figures; epact

30 as the asterisk *); i- vs j-terminal numeral sorts are preserved as printed. In leap years the dominical-letter column carries two letters.

The mean-full-moon **hour (H)** sub-column is the smallest type on these leaves and does not always resolve on the scan; its digits are given as best readings and flagged where uncertain.

Leaf 1 — new calendar, A.D. 2048–2103 (printed folio 396)

Columns: A.D. | Golden No. | Epact | Dominical (Greg.) | Mean full moon (day · hour · month) | Luna 14 (Greg.) | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter (*Pascha novi*) | Ascension

A.	G	Epa	D		Luna	Septua	Ash	East	Ascensi
D.	N	ct	o	Full moon (D·H·mo)	14	g.	Wed.	er	on
20 48	1 6	xiii j	e d	29 · 3 M	30 M	2 Feb.	19 Feb.	5 A	14 Maij
20 49	1 7	25	c	17 · 1 A	17 A	14 Feb.	3 Mar.	18 A	27 Maij
20 50	1 8	vj	b	6 · 10 A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
20 51	1 9	xvij	A	26 · 18 M	27 M	29 Ian.	15 Feb.	2 A	11 Maij
20 52	1	xxix	g f	13 · 16 A	14 A	18 Feb.	6 Mar.	21 A	30 Maij
20 53	2	x	e	3 · 1 A	3 A	2 Feb.	19 Feb.	6 A	15 Maij
20 54	3	xxj	d	23 · 10 M	23 M	25 Ian.	11 Feb.	29 M	7 Maij
20 55	4	ij	c	11 · 7 A	11 A	14 Feb.	3 Mar.	18 A	27 Maij
20 56	5	xiiij	b A	30 · 16 M	31 M	30 Ian.	16 Feb.	2 A	11 Maij
20 57	6	xxiii j	g	18 · 13 A	18 A	19 Feb.	7 Mar.	22 A	31 Maij
20 58	7	v	f	7 · 22 A	8 A	10 Feb.	27 Feb.	14 A	23 Maij

A. D.	G Epa N ct	D o m.	Full moon (D·H·mo)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
20 59	8 xvj	e	28 · 7 M	28 M	26 Ian.	12 Feb.	30 M	8 Maij
20 60	9 xxvi j	d c	15 · 5 A	16 A	15 Feb.	3 Mar.	18 A	27 Maij
20 61	1 viij 0	b	4 · 13 A	5 A	6 Feb.	23 Feb.	10 A	19 Maij
20 62	1 xix 1	A	24 · 22 M	25 M	22 Ian.	8 Feb.	26 M	4 Maij
20 63	1 * 2	g	12 · 20 A	13 A	11 Feb.	28 Feb.	15 A	24 Maij
20 64	1 xj 3	f e	1 · 5 A	2 A	3 Feb.	20 Feb.	6 A	15 Maij
20 65	1 xxij 4	d	21 · 13 M	22 M	25 Ian.	11 Feb.	29 M	7 Maij
20 66	1 iij 5	c	9 · 11 A	10 A	7 Feb.	24 Feb.	11 A	20 Mai
20 67	1 xiiij 6	b	29 · 20 M	30 M	30 Ian.	16 Feb.	3 A	12 Maij
20 68	1 25 7	A g	16 · 17 A	17 A	19 Feb.	7 Mar.	22 A	31 Maij
20 69	1 vj 8	f	6 · 2 A	7 A	10 Feb.	27 Feb.	14 A	23 Maij
20 70	1 xvij 9	e	26 · 11 M	27 M	26 Ian.	12 Feb.	30 M	8 Maij
20 71	1 xxix	d	14 · 8 A	14 A	15 Feb.	4 Mar.	19 A	28 Maij
20 72	2 x	c b	2 · 17 A	3 A	7 Feb.	24 Feb.	11 A	20 Maij
20 73	3 xxj	A	23 · 2 M	23 M	22 Ian.	8 Feb.	26 M	4 Maij
20 74	4 ij	g	11 · 0 A	11 A	11 Feb.	28 Feb.	15 A	24 Maij

A. D.	G Epa N ct	D o m.	Full moon (D·H·mo)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
20 75	5 xiiij	f	31 · 8 M	31 M	3 Feb.	20 Feb.	7 A	16 Maij
20 76	6 xxiii j	e d	18 · 6 M	18 A	16 Feb.	4 Mar.	19 A	28 Maij
20 77	7 v	c	7 · 15 A	8 A	8 Feb.	24 Feb.	11 A	20 Maij
20 78	8 xvj	b	28 · 0 M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
20 79	9 xxvi j	A	15 · 21 A	16 A	19 Feb.	8 Mar.	23 A	1 Iunij
20 80	1 viij 0	g f	4 · 6 A	5 A	4 Feb.	21 Feb.	7 A	16 Maij
20 81	1 xix 1	e	24 · 15 M	25 M	26 Ian.	12 Feb.	30 M	8 Maij
20 82	1 * 2	d	12 · 12 A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
20 83	1 xj 3	c	1 · 21 A	2 A	31 Ian.	17 Feb.	4 A	13 Maij
20 84	1 xxij 4	b A	21 · 6 M	22 M	23 Ian.	9 Feb.	26 M	4 Maij
20 85	1 iij 5	g	9 · 4 A	10 A	11 Feb.	28 Feb.	15 A	24 Maij
20 86	1 xiiij 6	f	29 · 12 M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
20 87	1 25 7	e	17 · 10 A	17 A	16 Feb.	5 Mar.	20 A	29 Maij
20 88	1 vj 8	d c	5 · 19 A	7 A	8 Feb.	25 Feb.	11 A	20 Maij
20 89	1 xvij 9	b	26 · 3 M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
20 90	1 xxix	A	14 · 1 A	14 A	12 Feb.	1 Mar.	16 A	25 Maij

A. D.	G Epa N ct	D o m.	Full moon (D·H·mo)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
20 91	2 x	g	3 · 10 A	3 A	4 Feb.	21 Feb.	8 A	17 Maij
20 92	3 xxj	f e	22 · 19 M	23 M	26 Ian.	12 Feb.	30 M	8 Maij
20 93	4 ij	d	10 · 16 A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
20 94	5 xiiij	c	31 · 1 M	1 A	31 Ian.	17 Feb.	4 A	13 Maij
20 95	6 xxiii j	b	18 · 23 A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
20 96	7 v	A g	7 · 7 A	8 A	12 Feb.	29 Feb.	15 A	24 Maij
20 97	8 xvj	f	17 · 16 M	28 M	27 Ian.	13 Feb.	31 M	9 Maij
20 98	9 xxvi j	e	15 · 14 A	16 A	16 Feb.	5 Mar.	20 A	29 Maij
20 99	1 viij 0	d	4 · 23 A	5 A	8 Feb.	25 Feb.	12 A	21 Maij
21 00	1 xix 1	c	26 · 7 M	25 M	24 Ian.	10 Feb.	28 M	6 Maij
21 01	1 * 2	b	13 · 5 A	13 A	13 Feb.	2 Mar.	17 A	26 Maij
21 02	1 xj 3	A	2 · 14 A	2 A	5 Feb.	22 Feb.	9 A	18 Maij
21 03	1 xxij 4	g	22 · 23 M	22 M	21 Ian.	7 Feb.	25 M	3 Maij

Leaf 1 (right side) — old calendar, A.D. 2048–2103 (printed folio 397)

Columns: A.D. | Pentecost (*Pentecoste*) | Corpus Christi (*Corpus Domini*) | Indiction (*Indictio*) | Sundays after Pentecost (*Dominicæ post Pentecosten*) | First Sunday of Advent (*Dominica prima Adventus*) | Dominical (*veteris*) | Luna 14

(*veteris*) | Easter (*Pascha veteris*) | Days by which new Easter differs from old (*Diff.*)

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
2 0 4 8	24 Maij	4 Iunij	1 1	26	29 No u.	f e	21 M	23 M	0
2 0 4 9	6 Iunij	17 Iunij	1 2	24	28 No u.	d	9 A	12 A	7
2 0 5 0	29 Maij	9 Iunij	1 3	25	27 No u.	c	29 M	4 A	7
2 0 5 1	21 Maij	1 Iunij	1 4	27	3 Dec .	b	17 A	24 A	3 5
2 0 5 2	9 Iunij	20 Iunij	1 5	24	1 Dec .	A g	5 A	8 A	0
2 0 5 3	25 Maij	5 Iunij	1	26	30 No u.	f	25 M	31 M	7
2 0 5 4	17 Maij	28 Maij	2	27	29 No u.	e	13 A	20 A	3 5
2 0 5	6 Iunij	17 Iunij	3	24	28 No u.	d	2 A	5 A	0

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
5									
2 0 5 6	21 Maij	1 Iunij	4	27	3 Dec .	c b	22 M	27 M	7
2 0 5 7	10 Iunij	21 Iunij	5	24	2 Dec .	A	10 A	16 A	7
2 0 5 8	2 Iunij	13 Iunij	6	25	1 Dec .	g	30 M	1 A	0
2 0 5 9	18 Maij	29 Maij	7	27	30 No u.	f	18 A	21 A	3 5
2 0 6 0	6 Iunij	17 Iunij	8	24	28 No u.	e d	7 A	12 A	7
2 0 6 1	29 Maij	9 Iunij	9	25	27 No u.	c	27 M	28 M	0
2 0 6 2	14 Maij	25 Maij	1 0	28	3 Dec .	b	15 A	17 A	3 5
2 0 6 3	3 Iunij	14 Iunij	1 1	25	2 Dec .	A	4 A	9 A	7

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
2 0 6 4	25 Maij	5 Iunij	1 2	26	30 No u.	g f	24 M	31 M	7
2 0 6 5	17 Maij	28 Maij	1 3	27	29 No u.	e	12 A	13 A	2 8
2 0 6 6	30 Maij	10 Iunij	1 4	25	28 No u.	d	1 A	5 A	7
2 0 6 7	22 Maij	2 Iunij	1 5	26	27 No u.	c	21 M	28 M	7
2 0 6 8	10 Iunij	21 Iunij	1	24	2 Dec .	b A	9 A	16 A	7
2 0 6 9	2 Iunij	13 Iunij	2	25	1 Dec .	g	29 M	1 A	0
2 0 7 0	18 Maij	29 Maij	3	27	30 No u.	f	17 A	21 A	3 5
2 0 7 1	7 Iunij	18 Iunij	4	24	29 No u.	e	5 A	6 A	0
2	29	9 Iunij	5	25	27	d c	25 M	29 M	0

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
0 7 2	Maij				No u.				
2 0 7 3	14 Maij	25 Maij	6	28	3 Dec .	b	13 A	17 A	3 5
2 0 7 4	3 Iunij	14 Iunij	7	25	2 Dec .	A	2 A	9 A	7
2 0 7 5	26 Maij	6 Iunij	8	26	1 Dec .	g	22 M	25 M	0
2 0 7 6	7 Iunij	18 Iunij	9	24	29 No u.	f e	10 A	13 A	7
2 0 7 7	30 Maij	10 Iunij	1 0	25	28 No u.	d	30 M	5 A	7
2 0 7 8	22 Maij	2 Iunij	1 1	26	27 No u.	c	18 A	25 A	3 5
2 0 7 9	11 Iunij	22 Iunij	1 2	24	3 Dec .	b	7 A	10 A	0
2 0	26 Maij	6 Iunij	1 3	26	1 Dec	A g	27 M	1 A	7

A . D . 8 0	Pente cost	Corpus	I n d . Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
2 0 8 1	18 Maij	29 Maij	1 27 4	30 No u.	f	15 A	21 A	3 5
2 0 8 2	7 Iunij	18 Iunij	1 24 5	29 No u.	e	4 A	6 A	0
2 0 8 3	23 Maij	3 Iunij	1 26	28 No u.	d c	24 M	29 M	7
2 0 8 4	14 Maij	25 Maij	2 28	3 Dec .	b	12 A	17 A	3 5
2 0 8 5	3 Iunij	14 Iunij	3 25	2 Dec .	A	1 A	2 A	0
2 0 8 6	19 Maij	30 Iunij [recte: Maij]	4 27	1 Dec .	g	21 M	25 M	7
2 0 8 7	8 Iunij	19 Iunij	5 24	30 No u.	f e	9 A	14 A	7
2 0 8	30 Maij	10 Iunij	6 25	28 No u.	d	29 M	5 A	7

A . D . 8	Pente cost	Corpus	I n d . Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
2 0 8 9	22 Maij	2 Iunij	7 26	27 No u.	c	17 A	18 A	2 8
2 0 9 0	4 Iunij	15 Iunij	8 25	3 Dec .	b	5 A	10 A	7
2 0 9 1	27 Maij	7 Iunij	9 26	2 Dec .	A g	25 M	26 M	0
2 0 9 2	18 Maij	29 Maij	1 27 0	30 No u.	f	13 A	14 A	2 8
2 0 9 3	31 Maij	11 Ianij [recte: Iunij]	1 25 1	29 No u.	e	2 A	6 A	7
2 0 9 4	23 Maij	3 Iunij	1 26 2	28 No u.	d	22 M	29 M	7
2 0 9 5	12 Iunij	23 Iunij	1 23 3	27 No u.	c	10 A	11 A	0
2 0 9 6	3 Iunij	14 Iunij	1 25 4	2 Dec .	b A	30 M	2 A	0

A . D . .	Pente cost	Corpus	I n d . .	Sun. p. Pent.	Adv ent	Dom. vet.	Luna 14 vet.	Easter vet.	Di ff.
2 0 9 7	19 Maij	30 Maij	1 5	27	1 Dec .	g	18 A	22 A	3 5
2 0 9 8	8 Iunij	19 Iunij	1	24	30 No u.	f	7 A	14 A	7
2 0 9 9	31 Maij	11 Iunij	2	25	29 No u.	e	27 M	30 M	0
2 1 0 0	16 Maij	27 Maij	3	27	28 No u.	d c	15 A	18 A	3 5
2 1 0 1	5 Iunij	16 Iunij	4	24	27 No u.	b	4 A	10 A	7
2 1 0 2	28 Maij	8 Iunij	5	26	3 Dec .	A	24 M	26 M	0
2 1 0 3	13 Maij	24 Maij	6	28	2 Dec .	g	12 A	15 A	3 5

Leaf 2 — new calendar, A.D. 2104–2159 (printed folio 398)

Columns as for leaf 1.

A.D.	Ep act	D o m Full moon (D·H·mo)	Lu na 14	Sept uag.	Ash Wed .	Easter	Asce nsion
2104	iiij	f e	9 · 20 A	10 A	10 Feb.	27 Feb.	13 A Maij
2105	xii ij	d	30 · 5 M	30 M	1 Feb.	18 Feb.	5 A Maij
2106	25	c	18 · 2 A	17 A	14 Feb.	3 Mar.	18 A Maij
2107	vj	b	7 · 11 A	7 A	6 Feb.	23 Feb.	10 A Maij
2108	xvi j	A	26 · 20 M	27 M	29 Ian.	15 Feb.	1 A Maij
2109	xxi x	g f	14 · 18 A	14 A	17 Feb.	6 Mar.	21 A Maij
2110	x	e	4 · 2 A	3 A	2 Feb.	19 Feb.	6 A Maij
2111	xxj	d	24 · 11 M	23 M	25 Ian.	11 Feb.	29 M Maij
2112	ij	c b	11 · 9 A	11 A	14 Feb.	2 Mar.	17 A Maij
2113	xii j	A	31 · 18 M	31 M	29 Ian.	15 Feb.	2 A Maij
2114	xxi iiij	g	19 · 15 A	18 A	18 Feb.	7 Mar.	22 A Maij
2115	v	f	9 · 0 A	8 A	10 Feb.	27 Feb.	14 A Maij
2116	xvj	e d	28 · 9 M	28 M	26 Ian.	12 Feb.	29 M Maij
2117	xx vij	c	16 · 6 A	16 A	14 Feb.	3 Mar.	18 A Maij
2118	vii j	b	5 · 15 A	5 A	6 Feb.	23 Feb.	10 A Maij

A.D.	Ep act	D o m Full moon (D·H·mo)	Lu na 14	Sept uag.	Ash Wed .	Easter	Asce nsion
2119	xix	A	26 · 0 M	25 M	22 Ian.	8 Feb.	26 M 4 Maij
2120	*	g f	12 · 21 A	13 A	11 Feb.	28 Feb.	14 A 23 Maij
2121	xj	e	2 · 6 A	2 A	2 Feb.	19 Feb.	6 A 15 Maij
2122	xxi j	d	22 · 15 M	22 M	25 Ian.	11 Feb.	29 M 7 Maij
2123	iiij	c	10 · 13 A	10 A	7 Feb.	24 Feb.	11 A 20 Maij
2124	xii ij	b A	29 · 21 M	30 M	30 Ian.	16 Feb.	2 M [recte: 2 A] 11 Maij
2125	25	g	17 · 19 A	17 A	18 Feb.	7 Mar.	22 A 31 Maij
2126	vj	f	7 · 4 A	7 A	10 Feb.	27 Feb.	14 A 23 Maij
2127	xvi j	e	27 · 13 M	27 M	26 Ian.	12 Feb.	30 M 8 Maij
2128	xxi x	d c	14 · 10 A	14 A	15 Feb.	3 Mar.	18 A 27 Maij
2129	x	b	3 · 19 A	3 A	6 Feb.	23 Feb.	10 A 19 Maij
2130	xxj	A	24 · 4 M	23 M	22 Ian.	8 Feb.	26 M 4 Maij
2131	ij	g	12 · 1 A	11 A	11 Feb.	28 Feb.	15 A 24 Maij
2132	xii j	f e	31 · 10 M	31 M	3 Feb.	20 Feb.	6 A 15 Maij
2133	xxi iiij	d	19 · 8 A	18 A	15 Feb.	4 Mar.	19 A 28 Maij
2134	v	c	8 · 16 A	8 A	7	24	11 A 20

A.D.	Ep act	D o m Full moon (D·H·mo)	Lu na 14	Sept uag.	Ash Wed .	Easter	Asce nsion
				Feb.	Feb.		Maij
2135	xvj	b 29 · 1 M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
2136	xx vij	A 15 · 23 A	16 A	19 Feb.	7 Mar.	22 A	31 Maij
2137	vii j	g f 5 · 8 A	5 A	3 Feb.	20 Feb.	7 A	16 Maij
2138	xix	e 25 · 16 M	25 M	26 Ian.	12 Feb.	30 M	8 Maij
2139	*	d 13 · 14 A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
2140	xj	c 1 · 23 A b	2 A	31 Ian.	17 Feb.	3 A	12 Maij
2141	xxi j	A 22 · 8 M	22 M	22 Ian.	8 Feb.	26 M	4 Maij
2142	iiij	g 10 · 5 A	10 A	11 Feb.	28 Feb.	15 A	24 Maij
2143	xii ij	f 30 · 14 M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
2144	25	e 17 · 11 A d	17 A	16 Feb.	4 Mar.	19 A	28 Maij
2145	vj	c 6 · 20 A	7 A	7 Feb.	24 Feb.	11 A	20 Maij
2246 [recte: 2146]	xvi j	b 27 · 5 M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
2147	xxi x	A 15 · 3 A	14 A	12 Feb.	1 Mar.	16 A	25 Maij
2148	x	g 3 · 11 A f	3 A	4 Feb.	21 Feb.	7 A	16 Maij
2149	xxi	e 23 · 20 M	23	26	12	30 M	8

A.D.	Ep act	D o m Full moon (D·H·mo)	Lu na 14	Sept uag.	Ash Wed .	Easter	Asce nsion
			M	Ian.	Feb.		Maij
2150	ij	d 11 · 18 A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
2151	xii j	c 1 · 3 A	31 M	31 Ian.	17 Feb.	4 A	13 Maij
2152	xxi iij	b 19 · 0 A A	18 A	20 Feb.	8 Mar.	23 A	1 Iunij
2153	v	g 8 · 9 A	8 A	11 Feb.	28 Feb.	15 A	24 Maij
2154	xvj	f 28 · 18 M	28 M	26 Ian.	12 Feb.	31 M	9 Maij
2155	xx vij	e 16 · 15 A	16 A	16 Feb.	5 Mar.	20 A	29 Maij
2156	vii j	d 5 · 0 A c	5 A	8 Feb.	25 Feb.	11 A	20 Maij
2157	xix	b 25 · 9 M	25 M	23 Ian.	9 Feb.	27 M	5 Maij
2158	*	A 13 · 7 A	13 A	12 Feb.	29 Feb.	16 A	25 Maij
2159	xi	g 2 · 15 A	2 A	4 Feb.	21 Feb.	8 A	17 Maij

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (1600–5000), continued

Chapter XXII. Temporary table of the movable feasts. The table runs across facing leaves in matched pairs: a new-calendar (Gregorian) leaf headed **TABVLA FESTORVM MOBILIVM** / *Calend. Greg.*, and an old-calendar (Julian, *veteris*) leaf headed **MOBILIVM TEMPORARIA** / *Caput XXII*. This portion covers years **2104–2215**.

- **Folio 399** is the old-calendar leaf completing the opening for **2104–2159** (its new-calendar partner, folio 398, was in the previous stretch).
- **Folio 400** is the new-calendar leaf for **2160–2215**.
- **Folio 401** is the old-calendar leaf for **2160–2215**.

Column conventions retained as printed: month abbreviations *Maij* (May), *Iunij* (June), *Ian.* (January), *Febr.* (February), *Mart.* (March), *Nou.* (November), *Dec.* (December); the single-letter month marker **M** = March, **A** = April in the moon/Easter columns. Golden numbers and epacts are transcribed in their printed figure (Roman vs. Arabic) exactly; the doubled epact 25 appears as Arabic 25 and epact 30 as the asterisk *. The mean-full-moon column is given as **day · hour · month**.

Folio 399 — old-calendar leaf, A.D. 2104–2159

Columns: A.D. | Pentecost | Corpus Christi | Indiction | Sundays after Pentecost | First Sunday of Advent | Dominical letter(s), old Calendar | Moon 14, old Calendar | Easter, old Calendar | Diff. (days by which new-Calendar Easter differs from old-Calendar Easter)

A.D.	Pentecost	Corpus	Ind.	Sun.aft.Pe nt.	Advent	D o m .	Luna 14	Easter	Diff.
2104	1 Iunij	12 Iunij	7	25	30 Nou.	f e	1 A	6 A	7
2105	24 Maij	4 Iunij	8	26	29 Nou.	d	21 M	22 M	0
2106	6 Iunij	17 Iunij	9	24	28 Nou.	c	9 A	11 A	7
2107	29 Maij	9 Iunij	1 0	25	27 Nou.	b	29 M	3 A	7
2108	20 Maij	31 Maij	1 1	27	2 Dec.	A g	17 A	22 A	35
2109	9 Iunij	20 Iunij	1 2	24	1 Dec.	f	5 A	7 A	0
2110	25 Maij	5 Iunij	1 3	26	30 Nou.	e	25 M	30 M	7

A.D.	Pentecost	Corpus	Ind.	Sun.aft.Pe	Advent	Dom.	Luna	East	Diff.
2111	17 Maij	28 Maij	1 4	27	29 Nou.	d	13 A	19 A	35
2112	5 Iunij	16 Iunij	1 5	24	27 Nou.	c b	2 A	3 A	0
2113	21 Maij	1 Iunij	1	27	3 Dec.	A	22 M	26 M	7
2114	10 Iunij	21 Iunij	2	24	2 Dec.	g	10 A	15 A	7
2115	2 Iunij	13 Iunij	3	25	1 Dec.	f	30 M	31 M	0
2116	17 Maij	28 Maij	4	27	29 Nou.	e d	18 A	19 A	35
2217 [recte: 2117]	6 Iunij	17 Iunij	5	24	28 Nou.	c	7 A	11 A	7
2118	29 Maij	9 Iunij	6	25	27 Nou.	b	27 M	3 A	7
2119	14 Maij	25 Maij	7	28	3 Dec.	A	15 A	16 A	35
2120	2 Iunij	13 Iunij	8	25	1 Dec.	g f	4 A	7 A	7
2121	25 Maij	5 Iunij	9	26	30 Nou.	e	24 M	30 M	7
2122	17 Maij	28 Maij	1 0	27	29 Nou.	d	12 A	19 A	35
2123	30 Maij	10 Iunij	1 1	25	28 Nou.	c	1 A	4 A	7
2124	21 Maij	1 Iunij	1 2	27	3 Dec.	b A	21 M	26 M	7
2125	10 Iunij	21 Iunij	1 3	24	2 Dec.	g	9 A	15 A	7
2126	2 Iunij	13	1	25	1	f	29 M	31	0

A.D.	Pentecost	Corpus	Ind.	Sun.aft.Pent.	Advent	Dom.	Luna 14	East	Diff.
		Iunij	4		Dec.			M	
2127	18 Maij	29 Maij	1 5	27	30 Nou.	e	17 A	20 A	35
2128	6 Iunij	17 Iunij	1	24	28 Nou.	d c	5 A	11 A	7
2129	29 Maij	9 Iunij	2	25	27 Nou.	b	25 M	27 M	0
2130	14 Iunij	25 Iunij	3	28	3 Dec.	A	13 A	16 A	35
2131	3 Iunij	14 Iunij	4	25	2 Dec.	g	2 A	8 A	7
2132	25 Maij	5 Iunij	5	26	30 Nou.	f e	22 M	23 M	0
2133	7 Iunij	18 Iunij	6	24	29 Nou.	d	10 A	12 A	7
2134	30 Maij	10 Iunij	7	25	28 Nou.	c	30 M	4 A	7
2135	22 Maij	2 Iunij	8	26	27 Nou.	b	18 A	24 A	35
2136	10 Iunij	21 Iunij	9	24	2 Dec.	A g	7 A	8 A	0
2137	26 Maij	6 Iunij	1 0	26	1 Dec.	f	27 M	31 M	7
2138	18 Maij	29 Maij	1 1	27	30 Nou.	e	15 A	20 A	35
2139	7 Iunij	18 Iunij	1 2	24	29 Nou.	d	4 A	5 A	0
2140	22 Maij	2 Iunij	1 3	26	27 Nou.	c b	24 M	27 M	7
2141	14 Maij	25 Maij	1 4	28	3 Dec.	A	12 A	16 A	35

A.D.	Pentecost	Corpus	Ind.	Sun.aft.Pe	Advent	Dom.	Luna	East	Diff.
2142	3 Iunij	14 Iunij	1 5	25	2 Dec.	g	1 A	8 A	7
2143	19 Maij	30 Maij	1	27	1 Dec.	f	21 M	24 M	7
2144	7 Iunij	18 Iunij	2	24	29 Nou.	e d	9 A	12 A	7
2145	30 Maij	10 Iunij	3	25	28 Nou.	c	29 M	4 A	7
2146	22 Maij	2 Iunij	4	26	27 Nou.	b	17 A	24 A	35
2147	4 Iunij	15 Iunij	5	25	3 Dec.	A	5 A	9 A	7
2148	26 Maij	6 Iunij	6	26	1 Dec.	g f	25 M	31 M	7
2149	18 Maij	29 Maij	7	27	30 Nou.	e	13 A	20 A	35
2150	31 Maij	11 Iunij	8	25	29 Nou.	d	2 A	5 A	7
2151	23 Maij	3 Iunij	9	26	28 Nou.	c	22 M	28 M	7
2152	11 Iunij	22 Iunij	1 0	24	3 Dec.	b A	10 A	16 A	7
2153	3 Iunij	14 Iunij	1 1	25	2 Dec.	g	30 M	1 A	0
2154	19 Maij	30 Maij	1 2	27	1 Dec.	f	18 A	21 A	35
2155	8 Iunij	19 Iunij	1 3	24	30 Nou.	e	7 A	13 A	7
2156	30 Maij	10 Iunij	1 4	25	28 Nou.	d c	27 M	28 M	0
2157	15	26	1	27	27	b	15 A	17	35

A.D.	Pentecost	Corpus	Ind.	Sun.aft.Pent.	Advent	Dom.	Luna 14	Easter	Difference
	Maij	Maij	5		Nou.			A	
2158	4 Iunij	15 Iunij	1	25	3 Dec.	A	4 A	9 A	7
2159	27 Maij	7 Iunij	2	26	2 Dec.	g	24 M	25 M	0

Folio 400 — new-calendar (Gregorian) leaf, A.D. 2160–2215

Columns: A.D. | Golden Number (*Aureus Numerus*) | Epact | Dominical letter(s), Gregorian Calendar | Mean full moon, Gregorian Calendar (day · hour · month) | Moon 14, Gregorian Calendar | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter, new Calendar | Ascension

A.D.	Golden Number	Epact	Dominical letter(s)	Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	Easter	Ascension
2160	1 xxii	f		22 · 0 · M	22 M	20 Ian.	6 Febr.	23 M	1 Maij
2161	4	e							
2162	1 iii	d		9 · 22 · A	10 A	8 Febr.	25 Febr.	12 A	21 Maij
2163	5								
2164	1 xiiii	c		30 · 6 · M	30 M	31 Ian.	17 Febr.	4 A	13 Maij
2165	6								
2166	2								
2167	1 25	b		18 · 4 · A	17 A	20 Febr.	9 Mart.	24 A	2 Iunij
2168	7								
2169	1 vi	A		6 · 13 · A	7 A	5 Febr.	22	8 A	17 Maij

A. D.	G Epa N ct	D o m		Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
		.							
1 6 4	8		g				Febr.		
2 1 6 5	1 xvii 9	f		26 · 22 · M	27 M	27 Ian.	13 Febr.	31 M	9 Maij
2 1 6 6	1 xxix	e		14 · 19 · A	14 A	16 Febr.	5 Mart.	20 A	29 Maij
2 1 6 7	2 x	d		4 · 4 · A	3 A	1 Febr.	18 Febr.	5 A	14 Maij
2 1 6 8	3 xxi	c b		23 · 13 · M	23 M	24 Ian.	10 Febr.	27 M	5 Maij
2 1 6 9	4 ii	A		11 · 10 · A	11 A	12 Febr.	1 Mart.	16 A	25 Maij
2 1 7 0	5 xiii	g		31 · 19 · M	31 M	28 Ian.	14 Febr.	1 A	10 Maij
2 1 7 1	6 xxii ii	f		19 · 17 · A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
2 1	7 v	e d		8 · 2 · A	8 A	9 Febr.	26 Febr.	12 A	21 Maij

		D o		Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
A. D.	G Epa N ct	m .							
7 2									
2 1 7 3	8 xvi	c	28 · 10 · M	28 M	31 Ian.	17 Febr.	4 A	13 Maij	
2 1 7 4	9 xxvi i	b	16 · 8 · A	16 A	13 Febr.	2 Mart.	17 A	26 Maij	
2 1 7 5	1 viii 0	A	5 · 17 · A	5 A	5 Febr.	22 Febr.	9 A	18 Maij	
2 1 7 6	1 xix 1	g f	25 · 2 · M	25 M	28 Ian.	14 Febr.	31 M	9 Maij	
2 1 7 7	1 * 2	e	12 · 23 · A	13 A	16 Febr.	5 Mart.	20 A	29 Maij	
2 1 7 8	1 xi 3	d	2 · 8 · A	2 A	1 Febr.	18 Febr.	5 A	14 Maij	
2 1 7 9	1 xxii 4	c	22 · 17 · M	22 M	24 Ian.	10 Febr.	28 M	6 Maij	
2 1 8	1 iii 5	b A	9 · 14 · A	10 A	13 Febr.	1 Mart.	16 A	25 Maij	

		D o						
A. D.	G Epa N ct	m .	Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
0								
2 1 8 1	1 xiiii 6	g	29 · 23 · M	30 M	28 Ian.	14 Febr.	1 A	10 Maij
2 1 8 2	1 25 7	f	17 · 21 · A	17 A	17 Febr.	6 Mart.	21 A	30 Maij
2 1 8 3	1 vi 8	e	7 · 5 · A	7 A	9 Febr.	26 Febr.	13 A	22 Maij
2 1 8 4	1 xvii 9	d c	26 · 14 · M	27 M	27 Ian.	11 Febr.	28 M	6 Maij
2 1 8 5	1 xxix	b	14 · 12 · A	14 A	13 Febr.	2 Mart.	17 A	26 Maij
2 1 8 6	2 x	A	3 · 21 · A	3 A	5 Febr.	22 Febr.	9 A	18 Maij
2 1 8 7	3 xxi	g	24 · 5 · M	23 M	21 Ian.	7 Febr.	25 M	3 Maij
2 1 8 8	4 ii	f e	11 · 3 · A	11 A	10 Febr.	27 Febr.	13 A	22 Maij

		D o		Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
A. D.	G Epa N ct	m .							
2 1 8 9	5 xiii	d		31 · 12 · M	31 M	1 Febr.	18 Febr.	5 A	14 Maij
2 1 9 0	6 xxii ii	c		19 · 9 · A	18 A	21 Febr.	10 Mart.	25 A	3 Iunij
2 1 9 1	7 v	b		8 · 18 · A	8 A	6 Febr.	23 Febr.	10 A	19 Maij
2 1 9 2	8 xvi	A g		28 · 3 · M	28 M	29 Ian.	15 Febr.	1 A	10 Maij
2 1 9 3	9 xxvi i	f		16 · 0 · A	16 A	17 Febr.	6 Mart.	21 A	30 Maij
2 1 9 4	1 viii 0	e		5 · 9 · A	5 A	2 Febr.	19 Febr.	6 A	15 Maij
2 1 9 5	1 xix 1	d		25 · 18 · M	25 M	25 Ian.	11 Febr.	29 M	7 Maij
2 1 9 6	1 * 2	c b		12 · 16 · A	13 A	14 Febr.	2 Mart.	17 A	26 Maij
2	1 xi	A		2 · ☉ · A	2 A	5 Febr.	22	9 A	18 Maij

A. D.	G Epa N ct	D o m		Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
		.							
1 9 7	3						Febr.		
2 1 9 8	1 xxii 4	g		22 · 9 · M	22 M	21 Ian.	7 Febr.	25 M	3 Maij
2 1 9 9	1 iii 5	f		10 · 7 · A	10 A	10 Febr.	27 Febr.	14 A	23 Maij
2 2 0 0	1 xiii 6	e		31 · 16 · M	31 M	2 Febr.	19 Febr.	6 A	15 Maij
2 2 0 1	1 xxii 7 ii	d		18 · 13 · A	18 A	15 Febr.	4 Mart.	19 A	28 Maij
2 2 0 2	1 v 8	c		7 · 22 · A	8 A	7 Febr.	24 Febr.	11 A	20 Maij
2 2 0 3	1 xvj 9	b		28 · 7 · M	28 M	30 Ian.	16 Febr.	3 A	12 Maij
2 2 0 4	1 xxvi ii	A g		15 · 4 · A	15 A	19 Febr.	7 Mart.	22 A	31 Maij
2 2	2 ix	f		4 · 13 · A	4 A	3 Febr.	20 Febr.	7 A	16 Maij

		D o						
A. D.	G Epa N ct	m .	Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
0 5								
2 2 0 6	3 xx	e	24 · 22 · M	24 M	26 Ian.	12 Febr.	30 M	8 Maij
2 2 0 7	4 j	d	12 · 19 · A	12 A	15 Febr.	4 Mart.	19 A	28 Maij
2 2 0 8	5 xii	c b	1 · 4 · A	1 A	31 Ian.	17 Febr.	3 A	12 Maij
2 2 0 9	6 xxii i	A	21 · 13 · M	21 M	22 Ian.	8 Febr.	26 M	4 Maij
2 2 1 0	7 iiii	g	9 · 11 · A	9 A	11 Febr.	28 Febr.	15 A	24 Maij
2 2 1 1	8 xv	f	29 · 19 · M	29 M	27 Ian.	13 Febr.	31 M	9 Maij
2 2 1 2	9 xxvi	e d	16 · 17 · A	17 A	16 Febr.	4 Mart.	19 A	28 Maij
2 2 1	1 vii 0	c	6 · 2 · A	6 A	7 Febr.	24 Febr.	11 A	20 Maij

		D o		Full moon (D·H·mo)	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
A.	G Epa D. N ct	m	.						
3									
2	1 xvii	b		26 · 11 · M	26 M	23 Ian.	9	27	5 Maij
2	1 i						Febr.	M	
1									
4									
2	1 xxix	A		14 · 8 · A	14 A	12 Febr.	1	16 A	25 Maij
2	2						Mart.		
1									
5									

Folio 401 — old-calendar (Julian, *veteris*) leaf, A.D. 2160–2215

Columns as on folio 399.

		D o		Sun.aft.Pent	Adve nt	Luna 14	East er	Diff.
A.	Pentec D. ost	Corpu s	In d.					
21	11 Maij	22	3	28	30	f	12 A	13 A 35
60		Maij			Nou.	e		
21	31 Maij	11	4	25	29	d	1 A	5 A 7
61		Iunij			Nou.			
21	23 Maij	3 Iunij	5	26	28	c	21 M	28 7
62					Nou.		M	
21	12 Iunij	23	6	23	27	b	9 A	10 A 0
63		Iunij			Nou.			
21	27 Maij	7 Iunij	7	26	2	A	29 M	1 A 7
64					Dec.	g		
21	19 Maij	30	8	27	1	f	17 A	21 A 35
65		Maij			Dec.			
21	8 Iunij	19	9	24	30	e	5 A	6 A 0
66		Iunij			Nou.			
21	24 Maij	4 Iunij	10	26	29	d	25 M	29 7

A. D.	Pentec ost	Corpu s	In d.	Sun.aft.Pent .	Adve nt	D o m .	Luna 14	East er	Diff.
67					Nou.			M	
21 68	15 Maij	26 Maij	11	27	27 Nou.	c b	13 A	17 A	53 [recte: 35]
21 69	4 Iunij	15 Iunij	12	25	3 Dec.	A	2 A	9 A	7
21 70	20 Maij	31 Maij	13	27	2 Dec.	g	22 M	25 M	7
21 71	9 Iunij	20 Iunij	14	24	1 Dec.	f	10 A	14 A	7
21 72	31 Maij	11 Iunij	15	25	29 Nou.	e d	30 M	5 A	7
21 73	23 Maij	3 Iunij	1	26	28 Nou.	c	18 A	25 A	35
21 74	5 Iunij	16 Iunij	2	24	27 Nou.	b	7 A	10 A	7
21 75	28 Maij	8 Iunij	3	26	3 Dec.	A	27 M	2 A	7
21 76	19 Maij	30 Maij	4	27	1 Dec.	g f	15 A	21 A	35
21 77	8 Iunij	19 Iunij	5	24	30 Nou.	e	4 A	6 A	0
21 78	24 Maij	4 Iunij	6	26	29 Nou.	d	24 M	29 M	7
21 79	16 Maij	27 Maij	7	27	28 Nou.	c	12 A	18 A	35
21 80	4 Iunij	15 Iunij	8	25	3 Dec.	b A	1 A	2 A	0
21 81	20 Maij	31 Maij	9	27	2 Dec.	g	21 M	25 M	7
21 82	9 Iunij	20 Iunij	10	24	1 Dec.	f	9 A	14 A	7

A. D.	Pentec ost	Corpu s	In d.	Sun.aft. .	Pent	Adve nt	D o m .	Luna 14	East er	Diff.
21 83	1 Iunij	12 Iunij	11	25		30 Nou.	e	29 M	30 M	0
21 84	16 Maij	27 Maij	12	27		28 Nou.	d c	17 A	18 A	35
21 85	5 Iunij	16 Iunij	13	24		27 Nou.	b	5 A	10 A	7
21 86	28 Maij	8 Iunij	14	26		3 Dec.	A	25 M	26 M	0
21 87	13 Maij	24 Maij	15	28		2 Dec.	g	13 A	15 A	35
21 88	1 Iunij	12 Iunij	1	25		30 Nou.	f e	2 A	6 A	7
21 89	24 Maij	4 Iunij	2	26		29 Nou.	d	22 M	29 M	7
21 90	13 Iunij	24 Iunij	3	23		28 Nou.	c	10 A	11 A	0
21 91	29 Maij	9 Iunij	4	25		27 Nou.	b	30 M	3 A	7
21 92	20 Maij	31 Maij	5	27		2 Dec.	A g	18 A	22 A	35
21 93	9 Iunij	20 Iunij	6	24		1 Dec.	f	7 A	14 A	7
21 94	25 Maij	5 Iunij	7	26		30 Nou.	e	27 M	30 M	7
21 95	17 Maij	28 Maij	8	27		29 Nou.	d	15 A	19 A	35
21 96	5 Iunij	16 Iunij	9	24		27 Nou.	c b	4 A	10 A	7
21 97	28 Maij	8 Iunij	10	26		3 Dec.	A	24 M	26 M	0

D o m .										
A. D.	Pentec ost	Corpu s	In d.	Sun.aft. .	Pent	Adve nt	Luna 14	East er	Diff.	
21 98	13 Maij	24 Maij	11	28		2 Dec.	g 12 A	15 A	35	
21 99	2 Iunij	13 Iunij	12	25		1 Dec.	f 1 A	7 A	7	
22 00	25 Maij	5 Iunij	13	26		30 Nou.	e 21 M	22 M	0	
22 01	7 Iunij	18 Iunij	14	24		29 Nou.	c 9 A	11 A	7	
22 02	30 Maij	10 Iunij	15	25		28 Nou.	b 29 M	3 A	7	
22 03	22 Maij	2 Iunij	1	26		27 Nou.	A 17 A	23 A	35	
22 04	10 Iunij	21 Iunij	2	24		2 Dec.	g 5 A	7 A	0	
22 05	26 Maij	6 Iunij	3	26		1 Dec.	e 25 M	30 M	7	
22 06	18 Maij	29 Maij	4	27		30 Nou.	d 13 A	19 A	35	
22 07	7 Iunij	18 Iunij	5	24		29 Nou.	c 2 A	4 A	0	
22 08	22 Maij	2 Iunij	6	26		27 Nou.	b 22 M	26 M	7	
22 09	14 Maij	25 Maij	7	28		3 Dec.	g 10 A	15 A	35	
22 10	3 Iunij	14 Iunij	8	25		2 Dec.	f 30 M	31 M	0	
22 11	19 Maij	30 Maij	9	27		1 Dec.	e 18 A	20 A	35	
22 12	7 Iunij	18 Iunij	10	24		29 Nou.	d 7 A	11 A	7	

					D o m i n i		Luna		East	Diff.
A. D.	Pentec ost	Corpu s	In d.	Sun.aft.Pent .	Adve nt	.	14		er	
22 13	30 Maij	10 Iunij	11	25	28 Nou.	b	27 M		3 A	35 [recte: 7]
22 14	15 Maij	26 Maij	12	27	27 Nou.	A	15 A		16 A	7 [recte: 35]
22 15	4 Iunij	15 Iunij	13	25	3 Dec.	g	4 A		8 A	7

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The paired new-calendar (Gregorian) and old-calendar (veteris) leaves of the perpetual table of movable feasts continue. This opening covers A.D. 2216–2327.

Leaf, folio 402 — new-calendar (Gregorian) side

Columns: **Anni Domini** (year) · **Aur. Num.** (golden number) · **Epactæ** · **Literæ Dominicales Caléd. Gregor.** (Dominical letters; two in leap years) · **Plenilunia media Cal. Gregor.** — day · hour (H) · month (M = March / A = April) · **Lunæ xiiii Calendarii Gregoriani** (day · month) · **Septuagesima** · **Dies Cinerum** (Ash Wednesday) · **Pascha Calend. noui** (day · month) · **Ascensio Domini.**

A	G	D								
.	.	o								
D	N	Ep	m	Plenil. media	Lun	Septuag	Dies	Pascha	Asce	
.	.	act	.	(D·H·mo)	a 14	esima	Cinerum	nou.	nsio	
2	1	x	g	2 · 17 · A	3 A	4 Febr.	21 Febr.	7 A	16	
2	3		f						Maij	
1										
6										
2	1	xxi	e	23 · 2 · M	23	26 Ian.	12 Febr.	30 M	8	
2	4				M				Maij	
1										
7										

A . . D	G . .	Ep . .	D . .	Plenil. media (D·H·mo)	Lun a 14	Septuag esima	Dies Cinerum	Pascha nou.	Asce nsio
2 2 1 8	1 5	ii	d	10 · 23 · A	11 A	8 Febr.	25 Febr.	12 A	21 Maij
2 2 1 9	1 6	xiii	c	31 · 8 · M	31 M	31 Ian.	17 Febr.	4 A	13 Maij
2 2 2 0	1 7	xxi iii	b A	18 · 6 · A	18 A	20 Febr.	8 Mart.	23 A	1 Iunij
2 2 2 1	1 8	v	g	7 · 14 · A	8 A	11 Febr.	28 Febr.	15 A	24 Maij
2 2 2 2	1 9	xvi	f	27 · 23 · M	28 M	27 Ian.	13 Febr.	31 M	9 Maij
2 2 2 3	1	xx viii	e	15 · 21 · A	15 A	16 Febr.	5 Mart.	20 A	29 Maij
2 2 2 4	2	ix	d c	4 · 6 · A	4 A	8 Febr.	25 Febr.	11 A	20 Maij
2 2 2 5	3	xx	b	24 · 14 · M	24 M	23 Ian.	9 Febr.	27 M	5 Maij
2	4	i	A	12 · 12 · A	12	12 Febr.	1 Mart.	16 A	25

A . . D	G . .	Ep . .	D . .	Plenil. media (D·H·mo)	Lun a 14	Septuag esima	Dies Cinerum	Pascha nou.	Asce nsio
2					A				Maij
2									
6									
2	5	xii	g	1 · 21 · A	1 A	4 Febr.	21 Febr.	8 A	17
2									Maij
2									
7									
2	6	xxi	f	21 · 6 · M	21	20 Ian.	6 Febr.	23 M	1
2		ii	e		M				Maij
2									
8									
2	7	iiii	d	9 · 3 · A	9 A	8 Febr.	25 Febr.	12 A	21
2									Maij
2									
9									
2	8	xv	c	29 · 12 · M	29	31 Ian.	17 Febr.	4 A	13
2					M				Maij
3									
0									
2	9	xx	b	17 · 9 · A	17	20 Febr.	9 Mart.	24 A	2
2		vi			A				Iunij
3									
1									
2	1	vii	A	5 · 18 · A	6 A	5 Febr.	22 Febr.	8 A	17
2	0		g						Maij
3									
2									
2	1	xvi	f	26 · 3 · M	26	27 Ian.	13 Febr.	31 M	9
2	1	ii			M				Maij
3									
3									
2	1	xxi	e	14 · 1 · A	14	16 Febr.	5 Mart.	20 A	29
2	2	x			A				Maij

A . D .	G . N .	Ep act	D o m .	Plenil. media (D·H·mo)	Lun a 14	Septuag esima	Dies Cinerum	Pascha nou.	Asce nsio
3									
4									
2 2 3 5	1 3	x	d	3 · 9 · A	3 A	1 Febr.	18 Febr.	5 A	14 Maij
2 2 3 6	1 4	xxi	c b	28 · 18 · M	23 M	24 Ian.	10 Febr.	27 M	5 Maij
2 2 3 7	1 5	ii	A	10 · 16 · A	11 A	12 Febr.	1 Mart.	16 A	25 Maij
2 2 3 8	1 6	xiii	g	31 · 1 · M	31 M	28 Ian.	14 Febr.	1 A	10 Maij
2 2 3 9	1 7	xxi iii	f	18 · 22 · A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
2 2 4 0	1 8	v	e d	7 · 7 · A	8 A	9 Febr.	26 Febr.	12 A	21 Maij
2 2 4 1	1 9	xvi	c	27 · 16 · M	28 M	31 Ian.	17 Febr.	4 A	13 Maij
2 2 4	1	xx viii	b	15 · 13 · A	15 A	13 Febr.	2 Mart.	17 A	26 Maij

A . D . .	G . N .	D . Ep . act	o . m .	Plenil. media (D·H·mo)	Lun a 14	Septuag esima	Dies Cinerum	Pascha nou.	Asce nsio
2									
2 2 2 4 3	2	ix	A	4 · 22 · A	4 A	5 Febr.	22 Febr.	9 A	18 Maij
2 2 4 4	3	xx	g f	24 · 7 · M	24 M	28 Ian.	14 Febr.	31 M	9 Maij
2 2 4 5	4	i	e	12 · 5 · A	12 A	9 Febr.	26 Febr.	13 A	22 Maij
2 2 4 6	5	xii	d	1 · 13 · A	1 A	1 Febr.	18 Febr.	5 A	14 Maij
2 2 4 7	6	xxi ii	c	21 · 22 · M	21 M	24 Ian.	10 Febr.	28 M	6 Maij
2 2 4 8	7	iiii	b A	8 · 20 · A	9 A	13 Febr.	1 Mart.	16 A	25 Maij
2 2 4 9	8	xv	g	29 · 4 · M	29 M	28 Ian.	14 Febr.	1 A	10 Maij
2 2 5 0	9	xx vi	f	17 · 2 · A	17 A	17 Febr.	6 Mart.	21 A	30 Maij

A . . D	G . .		D . .	Plenil. media (D·H·mo)	Lun a 14	Septuag esima	Dies Cinerum	Pascha nou.	Asce nsio
2 2 5 1	1 0	vii	e	6 · 11 · A	6 A	9 Febr.	26 Febr.	13 A	22 Maij
2 2 5 2	1 1	xvi ii	d c	25 · 20 · M	26 M	25 Ian.	11 Febr.	28 M	6 Maij
2 2 5 3	1 2	xxi x	b	13 · 17 · A	14 A	13 Febr.	2 Mart.	17 A	26 Maij
2 2 5 4	1 3	x	A	3 · 2 · A	3 A	5 Febr.	22 Febr.	9 A	18 Maij
2 2 5 5	1 4	xxi	g	23 · 11 · M	23 M	21 Ian.	7 Febr.	25 M	3 Maij
2 2 5 6	1 5	ii	f e	10 · 8 · A	11 A	10 Febr.	27 Febr.	13 A	22 Maij
2 2 5 7	1 6	xiii	d	30 · 17 · M	31 M	1 Febr.	18 Febr.	5 A	14 Maij
2 2 5 8	1 7	xxi iii	c	18 · 15 · A	18 A	21 Febr.	10 Mart.	25 A	3 Iunij
2 2	1	v	b	8 · 0 · A	8 A	6 Febr.	23 Febr.	10 A	19

A · D ·	G · N ·	Ep act	D o m ·	Plenil. media (D·H·mo)	Lun a 14	Septuag esima	Dies Cinerum	Pascha nou.	Asce nsio
2 5 9	8								Maij
2 2 6 0	1 9	xvj	A g	27 · 8 · M	28 M	29 Ian.	15 Febr.	1 A	10 Maij
2 2 6 1	1	xx viii	f	15 · 6 · A	15 A	17 Febr.	6 Mart.	21 A	30 Maij
2 2 6 2	2	ix	e	4 · 15 · A	4 A	2 Febr.	19 Febr.	6 A	15 Maij
2 2 6 3	3	xx	d	25 · 0 · M	24 M	25 Ian.	11 Febr.	29 M	7 Maij
2 2 6 4	4	j	c b	11 · 21 · A	12 A	14 Febr.	2 Mart.	17 A	26 Maij
2 2 6 5	5	xii	A	1 · 6 · A	1 A	29 Ian.	15 Febr.	2 A	11 Maij
2 2 6 6	6	xxi ii	g	21 · 15 · M	21 M	21 Ian.	7 Febr.	25 M	3 Maij
2 2	7	iiii	f	9 · 12 · A	9 A	10 Febr.	27 Febr.	14 A	23 Maij

A	G		D						
.	.		o						
D	N	Ep	m	Plenil. media	Lun	Septuag	Dies	Pascha	Asce
.	.	act	.	(D·H·mo)	a 14	esima	Cinerum	nou.	nsio
6									
7									
2	8	xv	e	28 · 21 · M	28	2 Febr.	19 Febr.	5 A	14
2			d		M				Maij
6									
8									
2	9	xx	c	16 · 19 · A	17	14 Febr.	3 Mart.	18 A	27
2		vi			A				Maij
6									
9									
2	1	vii	b	6 · 3 · A	6 A	6 Febr.	23 Febr.	10 A	19
2	0								Maij
7									
0									
2	1	xvi	A	26 · 12 · M	26	29 Ian.	15 Febr.	2 A	11
2	1	ii			M				Maij
7									
1									

Leaf, folio 403 — old-calendar (*veteris*) side

Columns: **Anni Domini** · **Pentecoste** (day · month) · **Corpus Domini** (day · month) · **Indictio** · **Dnicæ post Pentecosten** (Sundays after Pentecost) · **Dominica prima Aduentus** (day · month; Dec./Nov.) · **Literæ Dnicales Calendarij veteris** (old-calendar Dominical letters; two in leap years) · **Lunæ xiiij Cal. veteris** (day · month) · **Pascha Caléndarij veteris** (Julian date; day · month) · **Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt** ("Diff.").

Pentecoste, Corpus Domini, Indictio, Dnicæ post Pentecosten, and Dominica prima Aduentus are the Gregorian (new-calendar) continuation of the preceding leaf; the Literæ, Luna 14, and Pascha columns are the old (Julian) calendar.

A . D . Pentecoste	Corpus Domini	I n d . Dnic. p. Pent.	Dom. I Aduent.	Do m. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2 26 Maij	6 Iunij	1 26	1 Dec.	f e	24 M	30 M	7
2		4					
1							
6							
2 18 Maij	29 Maij	1 27	30 Nou.	d	12 A	19 A	3
2		5					5
1							
7							
2 31 Maij	11 Iunij	1 25	29 Nou.	c	1 A	4 A	7
2							
1							
8							
2 23 Maij	3 Iunij	2 26	28 Nou.	b	21 M	27 M	7
2							
1							
9							
2 11 Maij	22 Iunij	3 24	3 Dec.	A g	9 A	15 A	7
2 [recte: Iunij]							
2							
0							
2 3 Iunij	14 Iunij	4 25	2 Dec.	f	29 M	31 M	o
2							
2							
1							
2 19 Maij	30 Maij	5 27	1 Dec.	e	17 A	20 A	3
2							5
2							
2							
2 8 Iunij	19 Iunij	6 24	30 Nou.	d	5 A	12 A	7
2							
2							
3							
2 30 Maij	10 Iunij	7 25	28 Nou.	c b	25 M	27 M	o

A . D .	Pentecoste	Corpus Domini	I n d .	Dnic. p. Pent.	Dom. I Aduent.	Do m. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2									
2									
4									
2	15 Maij	26* Maij	8	27	27 Nou.	A	13 A	16 A	3
2									5
2									
5									
2	4 Iunij	15 Iunij	9	25	3 Dec.	g	2 A	8 A	7
2									
2									
6									
2	27 Maij	7 Iunij	1	26	2 Dec.	f	21 M	24 M	o
2			0						
2									
7									
2	11 Maij	22 Maij	1	28	30 Nou.	e d	10 A	12 A	3
2			1						5
2									
8									
2	31 Maij	11 Iunij	1	25	29 Nou.	c	30 M	4 A	7
2			2						
2									
9									
2	22 Maii	3 Iunij	1	26	28 Nou.	b	18 A	24 A	3
2	[recte: 23]		3						5
3									
0									
2	12 Iunij	23 Iunij	1	23	27 Nou.	A	7 A	9 A	o
2			4						
3									
1									
2	27 Maij	7 Iunij	1	26	2 Dec.	g f	27 M	31 M	7
2			5						

A . D .	Pentecoste	Corpus Domini	I n d .	Dnic. p. Pent.	Dom. I Aduent.	Do m. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
0									
2 2 4 1	23 Maij	3 Iunij	9	26	28 Nou.	b	17 A	24 A	3 5
2 2 4 2	5 Iunij	16 Iunij	1 0	24	27 Nou.	A	5 A	9 A	7
2 2 4 3	28 Maij	8 Iunij	1 1	26	3 Dec.	g	25 M	1 A	7
2 2 4 4	19 Maij	30 Iunij [recte: Maij]	1 2	27	1 Dec.	f e	13 A	20 A	3 5
2 2 4 5	1 Iunij	12 Iunij	1 3	25	30 Nou.	d	2 A	5 A	7
2 2 4 6	24 Maij	4 Iunij	1 4	26	29 Nou.	c	22 M	28 M	7
2 2 4 7	16 Maij	27 Maij	1 5	27	28 Nou.	b	10 A	17 A	3 5
2 2 4 8	4 Iunij	15 Iunij	1	25	3 Dec.	A g	30 M	1 A	o

A . D . Pentecoste	Corpus Domini	I n d . Dnic. p. Pent.	Dom. I Aduent.	Do m. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2 20 Maij 2 4 9	31 Maij	2 27	2 Dec.	f	18 A	21 A	3 5
2 9 Iunij 2 5 0	20 Iunij	3 24	1 Dec.	e	7 A	13 A	7
2 1 Iunij 2 5 1	12 Iunij	4 25	30 Nou.	d	27 M	29 M	o
2 16 Maij 2 5 2	27 Maij	5 27	28 Nou.	c b	15 A	17 A	3 5
2 5 Iunij 2 5 3	16 Iunij	6 24	27 Nou.	A	4 A	9 A	7
2 28 Maij 2 5 4	8 Iunij	7 26	3 Dec.	g	24 M	25 M	o
2 13 Maij 2 5 5	24 Maij	8 28	2 Dec.	f	12 A	14 A	3 5
2 1 Iunij 2 5 6	12 Iunij	9 25	30 Nou.	e d	1 A	5 A	7
2 24 Maij	4 Iunij	1 26	29 Nou.	c	21 M	28 M	7

A . D .	Pentecoste	Corpus Domini	I n d .	Dnic. p. Pent.	Dom. I Aduent.	Do m. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2 5 7				0					
2 2 5 8	13 Iunij	24 Iunij	1 1	23	28 Nou.	b	9 A	10 A	o
2 2 5 9	29 Maij	9 Iunij	1 2	25	27 Nou.	A	29 M	2 A	7
2 2 6 0	20 Maij	31 Maij	1 3	27	2 Dec.	g f	17 A	21 A	3 5
2 2 6 1	9 Iunij	20 Iunij	1 4	24	1 Dec.	e	5 A	6 A	o
2 2 6 2	25 Maij	5 Iunij	1 5	26	30 Nou.	d	25 M	29 M	7
2 2 6 3	17 Maij	28 Maij	1	27	29 Nou.	c	13 A	18 A	3 5
2 2 6 4	5 Iunij	16 Iunij	2	25	27 Nou.	b A	2 A	9 A	7
2 2	21 Maij	1 Iunij	3	27	3 Dec.	g	22 M	25 M	7

A · D ·	Pentecoste	Corpus Domini	I n d ·	Dnic. p. Pent.	Dom. I Aduent.	Do m. vet.	Luna 14 vet.	Pasch a vet.	D i ff ·
6									
5									
2	13 Maij	24 Maij	4	28	2 Dec.	f	10 A	14 A	3
2									5
6									
6									
2	2 Iunij	13 Iunij	5	24	1 Dec.	e	30 M	6 A	7
2									
6									
7									
2	24 Maij	4 Iunij	6	26	29 Nou.	d c	18 A	25 A	3
2									5
6									
8									
2	6 Iunij	17 Iunij	7	24	28 Nou.	b	7 A	10 A	7
2									
6									
9									
2	29 Maij	9 Iunij	8	25	27 Nou.	A	27 M	2 A	7
2									
7									
0									
2	21 Maij	1 Iunij	9	27	3 Dec.	g	15 A	22 A	3
2									5
7									
1									

Leaf, folio 404 — new-calendar (Gregorian) side

Columns as folio 402: **Anni Domini · Aur. Num. · Epactæ · Literæ Dominicales Caléd. Gregor. · Plenilunia media Cal. Gregor.** (day · hour · month, M = March / A = April) · **Lunæ xiiii Calendarii Gregoriani · Septuagesima · Dies Cinerum · Pascha Calend. noui · Ascensio Domini.**

A D .	G N .	Ep act	D m .	Plenil. media (D·H·mo)	Lu na 14	Septuag esima	Dies Cineru m	Pascha nou.	Asce nsio
2 2 7 2	1 2	xx ix	g f	13 · 10 · A	14 A	18 Febr.	6 Mart.	21 A	30 Maij
2 2 7 3	1 3	x	e	2 · 19 · A	3 A	2 Febr.	19 Febr.	6 A	15 Maij
2 2 7 4	1 4	xx i	d	23 · 3 · M	23 M	25 Ian.	11 Febr.	29 M	7 Maij
2 2 7 5	1 5	ii	c	11 · 1 · A	11 A	14 Febr.	3 Mart.	18 A	27 Maij
2 2 7 6	1 6	xii i	b A	30 · 10 · M	31 M	30 Ian.	16 Febr.	2 A	11 Maij
2 2 7 7	1 7	xx iiii	g	18 · 7 · A	18 A	18 Febr.	7 Mart.	22 A	31 Maij
2 2 7 8	1 8	v	f	7 · 16 · A	8 A	10 Febr.	27 Febr.	14 A	23 Maij
2 2 7 9	1 9	xv i	e	28 · 1 · A	28 M	26 Ian.	12 Febr.	30 M	8 Maij
2	1	xx	d	14 · 22 · A	15	15	3 Mart.	18 A	27

A . D . . .	G . N . . .	Ep act	D m .	Plenil. media (D·H·mo)	Lu na 14	Septuag esima	Dies Cineru m	Pascha nou.	Asce nsio
2 8 0		vii i	c		A	Febr.			Maij
2 2 8 1	2	ix	b	4 · 7 · A	4 A	7 Febr.	23 Febr.	10 A	19 Maij
2 2 8 2	3	xx	A	24 · 16 · M	24 M	22 Ian.	8 Febr.	26 M	4 Maij
2 2 8 3	4	i	g	12 · 14 · A	12 A	11 Febr.	28 Febr.	15 A	24 Maij
2 2 8 4	5	xii	f e	31 · 22 · M	1 A	3 Febr.	20 Febr.	6 A	15 Maij
2 2 8 5	6	xx iii	d	21 · 7 · M	21 M	18 Ian.	4 Febr.	22 M	30 Apr.
2 2 8 6	7	iiii	c	9 · 5 · A	9 A	7 Febr.	24 Febr.	11 A	20 Maij
2 2 8 7	8	xv	b	29 · 14 · M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
2 2	9	xx vi	A	16 · 11 · A	17 A	19 Febr.	7 Mart.	22 A	31 Maij

A . D . . .	G . N . . .	Ep act	D o m .	Plenil. media (D·H·mo)	Lu na 14	Septuag esima	Dies Cineru m	Pascha nou.	Asce nsio
8 8			g						
2 2 8 9	1 0	vii	f	5 · 20 · A	6 A	3 Febr.	20 Febr.	7 A	16 Maij
2 2 9 0	1 1	xv iii	e	26 · 5 · M	26 M	26 Ian.	12 Febr.	30 M	8 Maij
2 2 9 1	1 2	xx ix	d	14 · 2 · A	14 A	15 Febr.	4 Mart.	19 A	28 Maij
2 2 9 2	1 3	x	c b	2 · 11 · A	3 A	7 Febr.	24 Febr.	10 A	19 Maij
2 2 9 3	1 4	xx i	A	22 · 20 · M	23 M	22 Ian.	8 Febr.	26 M	4 Maij
2 2 9 4	1 5	ii	g	10 · 17 · A	11 A	11 Febr.	28 Febr.	15 A	24 Maij
2 2 9 5	1 6	xii i	f	31 · 2 · M	31 M	3 Febr.	20 Febr.	7 A	16 Maij
2 2 9	1 7	xx iii	e d	18 · 0 · A	18 A	16 Febr.	4 Mart.	19 A	28 Maij

A D .	G N .		D o m .	Plenil. media (D·H·mo)	Lu na 14	Septuag esima	Dies Cineru m	Pascha nou.	Asce nsio
2 3 0 5	7	iii	A	9 · 21 · A	10 A	12 Febr.	1 Mart.	16 A	25 Maij
2 3 0 6	8	xii ii	g	30 · 6 · M	30 M	28 Ian.	14 Febr.	1 A	10 Maij
2 3 0 7	9	xx v	f	18 · 4 · A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
2 3 0 8	1 0	vi	e d	6 · 12 · A	7 A	9 Febr.	26 Febr.	12 A	21 Maij
2 3 0 9	1 1	xv ii	c	26 · 21 · M	27 M	24 Ian.	10 Febr.	28 M	6 Maij
2 3 1 0	1 2	xx vii i	b	14 · 19 · A	15 A	13 Febr.	2 Mart.	17 A	26 Maij
2 3 1 1	1 3	ix	A	4 · 4 · A	4 A	5 Febr.	22 Febr.	9 A	18 Maij
2 3 1 2	1 4	xx	g f	23 · 12 · M	24 M	28 Ian.	14 Febr.	31 M	9 Maij
2	1	i	e	11 · 10 · A	12	9 Febr.	26	13 A	22

A D .	G N .	Ep act	D m .	Plenil. media (D·H·mo)	Lu na 14	Septuag esima	Dies Cineru m	Pascha nou.	Asce nsio
3 1 3	5				A		Febr.		Maij
2 3 1 4	1 6	xii	d	1 · 19 · A	1 A	1 Febr.	18 Febr.	5 A	14 Maij
2 3 1 5	1 7	xx iii	c	21 · 4 · M	21 M	24 Ian.	10 Febr.	28 M	6 Maij
2 3 1 6	1 8	iiii	b A	8 · 1 · A	9 A	13 Febr.	1 Mart.	16 A	25 Maij
2 3 1 7	1 9	xv	g	28 · 10 · M	29 M	28 Ian.	14 Febr.	1 A	10 Maij
2 3 1 8	1	xx vii	f	16 · 8 · A	16 A	17 Febr.	6 Mart.	12 A [recte: 21 A]	30 Maij
2 3 1 9	2	vii i	e	5 · 16 · A	5 A	2 Febr.	19 Febr.	6 A	15 Maij
2 3 2 0	3	xi x	d c	25 · 1 · M	25 M	25 Ian.	11 Febr.	28 M	6 Maij
2 3	4	*	b	12 · 23 · A	13 A	13 Febr.	2 Mart.	17 A	26 Maij

A	G		D			Lu		Dies		
.	.		o			na	Septuag	Cineru		Asce
D	N	Ep	m	Plenil. media		14	esima	m	Pascha nou.	nsio
.	.	act	.	(D·H·mo)						
2										
1										
2	5	xi	A	2 · 7 · A		2 A	5 Febr.	22	9 A	18
3								Febr.		Maij
2										
2										
2	6	xx	g	22 · 16 · M		22	21 Ian.	7 Febr.	25 M	3
3		ii				M				Maij
2										
3										
2	7	iii	f	9 · 14 · A		10	10	27	13 A	22
3			e			A	Febr.	Febr.		Maij
2										
4										
2	8	xii	d	29 · 23 · M		30	1 Febr.	18	5 A	14
3		ii				M		Febr.		Maij
2										
5										
2	9	xx	c	17 · 20 · A		18	21	10	25 A	3
3		v				A	Febr.	Mart.		Iuni
2										j
6										
2	1	vi	b	7 · 5 · A		7 A	6 Febr.	23	10 A	19
3	0							Febr.		Maij
2										
7										

Caput XXII — *Tabula Festorum Mobilium Temporaria* (1600–5000), continued

The *Table of the Movable Feasts for the Time Being* continues, in paired leaves: for each span of years a new-calendar (Gregorian) leaf faces an old-calendar (*veteris*, Julian) leaf. This opening supplies the **old-calendar leaf for the years 2272–2327** (whose new-calendar leaf preceded it), and then the **new-calendar and old-**

calendar leaves for the years 2328–2383. All values are transcribed cell-by-cell from the page; typographic distinctions (Roman vs. Arabic figures, the epact-30 asterisk *, i-/j-terminal Roman numerals, long-s) are preserved as printed.

Column key (old-calendar leaves): A.D. year | Pentecost (*Pentecoste*) | Corpus Christi (*Corpus Domini*) | Indiction (*Indictio*) | Sundays after Pentecost (*Dominicæ post Pentecosten*) | First Sunday of Advent (*Dominica prima Adventus*) | Dominical letter(s), old calendar (*Literæ Dominicales Calend. veteris*; two letters in a Julian leap year) | Moon 14, old calendar (*Lunæ xiiij Calend. veteris*) | Easter, old calendar (*Pascha Calendarij veteris*) | Difference of new-calendar Easter from old-calendar Easter, in days (*Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt*).

Column key (new-calendar leaf): A.D. year | Golden number (*Aureus Numerus*) | Epact (*Epacta*) | Dominical letter(s), Gregorian (*Literæ Dominicales Calend. Greg.*) | Mean full moon, Gregorian (*Plenilunia media Cal. Gregor.*), given as day · hour · month | Moon 14, Gregorian (*Lunæ xiiij Calendarij Gregoriani*) | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter, new calendar (*Pascha Calend. novi*) | Ascension (*Ascensio Domini*).

Dates are given as *day + month* (Ian. = January, Feb. = February, Mar. = March, A = April, M = March in the Moon-14/Easter sub-columns; Maij = May, Iunij = June). In the moon/Easter columns the printed single letter **A** = **April**, **M** = **March**.

Old-calendar leaf, A.D. 2272–2327

A									D
. Pent			In		Ad				i
D ecos	Corpus		dic	Sun. p.	ven	Dom. lett.	Moon	Easter	ff
. t	Christi		t.	Pent.	t I	(vet.)	14 (vet.)	(vet.)	.
2 9	20 Iunij		10	24	1	f e	4 A	6 A	0
2 Iuni					Dec				
7 j					.				
2									
2 25	5 Iunij		11	26	30	d	24 M	29 M	7
2 Maij					No				
7					u.				
3									
2 17	28 Maij		12	27	29	c	12 A	18 A	3
2 Maij					No				5
7					u.				

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
4									
2 6 2 Iuni 7 j 5	17 Iunij		13	24	28 No u.	b	1 A	3 A	0
2 21 2 Maij 7 6	1 Iunij		14	27	3 Dec .	A g	21 M	25 M	7
2 10 2 Iuni 7 j 7	21 Iunij		15	24	2 Dec .	f	9 A	14 A	7
2 2 2 Iuni 7 j 8	13 Iunij		1	25	1 Dec .	e	29 M	30 M	0
2 18 2 Maij 7 9	29 Iunij [recte: Maij]		2	27	30 No u.	d	17 A	19 A	3 5
2 6 2 Iuni 8 j 0	17 Iunij		3	24	28 No u.	c b	5 A	10 A	7
2 29 2 Maij 8 1	9 Iunij		4	25	27 No u.	A	25 M	26 M	0
2 14 2 Maij 8 2	25 Maij		5	28	3 Dec .	g	13 A	15 A	3 5

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
2 2 8 3	3 Iuni j	14 Iunij	6	25	2 Dec .	f	2 A	7 A	7
2 2 8 4	25 Maij	5 Iunij	7	26	30 No u.	e d	22 M	29 M	7
2 2 8 5	10 Maij	21 Maij	8	28	29 No u.	c	10 A	11 A	7
2 2 8 6	30 Maij	10 Iunij	9	25	28 No u.	b	30 M	3 A	3 5
2 2 8 7	22 Maii	2 Iunij	10	26	27 No u.	A	18 A	23 A	7
2 2 8 8	10 Iuni j	21 Iunij	11	24	2 Dec .	g f	7 A	14 A	0
2 2 8 9	26 Maij	6 Iunij	12	26	1 Dec .	e	27 M	30 M	3 5
2 2 9 0	18 Maij	29 Maij	13	27	30 No u.	d	15 A	19 A	7
2	7	18 Iunij	14	24	29	c	4 A	11 A	0

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
2 9 1	Iuni j				No u.				
2 2 9 2	29 Maij	9 Iunij	15	25	27 No u.	b A	24 M	26 M	7
2 2 9 3	14 Maij	25 Maij	1	28	3 Dec .	g	12 A	15 A	7
2 2 9 4	3 Iuni j	14 Iunij	2	25	2 Dec .	f	1 A	7 A	3 5
2 2 9 5	26 Maij	6 Iunij	3	26	1 Dec .	e	21 M	23 M	7
2 2 9 6	7 Iuni j	18 Iunij	4	24	29 No u.	d c	9 A	11 A	7
2 2 9 7	30 Maij	10 Iunij	5	25	28 No u.	b	29 M	3 A	7
2 2 9 8	22 Maij	2 Iunij	6	26	27 No u.	A	17 A	23 A	3 5
2 2	4 Iuni	15 Iunij	7	25	3 Dec	g	5 A	8 A	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
9 9	j				.				
2 3 0 0	27 Maij	7 Iunij	8	26	2 Dec	f e	25 M	30 M	7
2 3 0 1	19 Maij	30 Maij	9	27	1 Dec	d	13 A	19 A	3 5
2 3 0 2	8 Iuni j	19 Iunij	10	24	30 No u.	c	2 A	4 A	0
2 3 0 3	24 Maij	4 Iunij	11	26	29 No u.	b	22 M	27 M	7
2 3 0 4	15 Maij	26 Maij	12	27	27 No u.	A g	10 A	15 A	3 5
2 3 0 5	4 Iuni j	15 Iunij	13	25	3 Dec	f	30 M	31 M	0
2 3 0 6	20 Maij	31 Maij	14	27	2 Dec	e	18 A	20 A	3 5
2 3 0	9 Iuni j	20 Iunij	15	24	1 Dec	d	7 A	12 A	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
7									
2 3 0 8	31 Maij	11 Iunij	1	25	29 No u.	c b	27 M	3 A	7
2 3 0 9	16 Maij	27 Maij	2	27	28 No u.	A	15 A	16 A	3 5
2 3 1 0	5 Iuni j	16 Iunij	3	24	27 No u.	g	4 A	8 A	7
2 3 1 1	28 Maij	8 Iunij	4	26	3 Dec .	f	24 M	31 M	7
2 3 1 2	19 Maij	30 Maij	5	27	1 Dec .	e d	12 A	19 A	3 5
2 3 1 3	1 Iuni j	12 Iunij	6	25	30 No u.	c	1 A	4 A	7
2 3 1 4	24 Maij	4 Iunij	7	26	29 No u.	b	21 M	27 M	7
2 3 1 5	16 Maij	27 Maij	8	27	28 No u.	A	9 A	16 A	3 5

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
2 3 1 6	4 Iuni j	15 Iunij	9	25	3 Dec .	g f	29 M	41 M	0
2 3 1 7	20 Maij	31 Maij	10	27	2 Dec .	e	17 A	20 A	3 5
2 3 1 8	9 Iuni j	20 Iunij	11	24	1 Dec .	d	5 A	12 A	7
2 3 1 9	25 Maij	5 Iunij	12	26	30 No u.	c	25 M	28 M	7
2 3 2 0	16 Maij	27 Maij	13	27	28 No u.	b A	13 A	16 A	3 5
2 3 2 1	5 Iuni j	16 Iunij	14	24	27 No u.	g	2 A	8 A	7
2 3 2 2	28 Maij	8 Iunij	15	26	3 Dec .	f	22 M	24 M	0
2 3 2 3	13 Maij	24 Maij	1	28	2 Dec .	e	10 A	13 A	3 5
2	1	12 Iunij	2	25	30	d c	30 M	4 A	7

A . D . .	Pent ecos t	Corpus Christi	In dic t.	Sun. p. Pent.	Ad ven t I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff .
3 2 4	Iuni j				No u.				
2 3 2 5	24 Maij	4 Iunij	3	26	29 No u.	b	18 A	24 A	3 5
2 3 2 6	13 Iuni j	24 Iunij	4	23	28 No u.	A	7 A	9 A	0
2 3 2 7	29 Maij	9 Iunij	5	25	27 No u.	g	27 M	1 A	7

New-calendar leaf, A.D. 2328–2383

Epact 30 is set with the new-Calendar asterisk *. In the mean-full-moon column the smallest sub-column is the hour (H); as elsewhere in this table it does not always resolve on the scan, and the H figures below are best readings.

A . D . .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
2 3 2 8	xvi j	A g	26 · 14 · M	27 M	29 Ian.	15 Feb.	1 A	10 Maij
2 3 2 9	xx viiij	f	14 · 11 · A	15 A	17 Feb.	6 Mar.	21 A	30 Maij

A . D .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
2 3 3 0	ix	e	3 · 20 · A	4 A	2 Feb.	19 Feb.	6 A	15 Maij
2 3 3 1	xx	d	24 · 5 · M	24 M	25 Ian.	11 Feb.	27 M	7 Maij
2 3 3 2	j	c b	11 · 3 · A	12 A	14 Feb.	2 Mar.	17 A	26 Maij
2 3 3 3	xij	A	31 · 11 · M	1 A	29 Ian.	15 Feb.	2 A	11 Maij
2 3 3 4	xxi ij	g	20 · 20 · M	21 M	21 Ian.	7 Feb.	25 M	3 Maij
2 3 3 5	iiij	f	8 · 18 · A	9 A	10 Feb.	27 Feb.	14 A	23 Maij
2 3 3 6	xv	e d	28 · 3 · M	29 M	2 Feb.	19 Feb.	5 A	14 Maij
2 3 3 7	xx vij	c	16 · 0 · A	16 A	14 Feb.	3 Mar.	18 A	27 Maij
2	viiij	b	5 · 9 · A	5 A	6	24	10 A	19

A . D .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
3 3 8					Feb.	Feb.		Maij
2 3 3 9	xix	A	25 · 18 · M	25 M	22 Ian.	8 Feb.	26 M	4 Maij
2 3 4 0	*	g f	12 · 15 · A	13 A	11 Feb.	28 Feb.	14 A	23 Maij
2 3 4 1	xj	e	2 · 0 · A	2 A	2 Feb.	19 Feb.	6 A	15 Maij
2 3 4 2	xxi j	d	22 · 9 · M	22 M	25 Ian.	11 Feb.	29 M	7 Maij
2 3 4 3	ijj	c	10 · 6 · A	10 A	7 Feb.	24 Feb.	11 A	20 Maij
2 3 4 4	xii ij	b A	29 · 15 · M	30 M	30 Ian.	16 Feb.	2 A	11 Maij
2 3 4 5	xx v	g	17 · 13 · A	18 A	18 Feb.	7 Mar.	22 A	31 Maij
2 3	vj	f	6 · 22 · A	7 A	10 Feb.	27 Feb.	14 A	23 Maij

A . D .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
4								
6								
2 3 4 7	xvi j	e	27 · 6 · M	27 M	26 Ian.	12 Feb.	30 M	8 Maij
4								
7								
2 3 4 8	xx viiij	d c	14 · 4 · A	15 A	15 Feb.	3 Mar.	18 A	27 Maij
4								
8								
2 3 4 9	ix	b	3 · 13 · A	4 A	6 Feb.	23 Feb.	10 A	19 Maij
4								
9								
2 3 5 0	xx	A	23 · 22 · M	24 M	22 Ian.	8 Feb.	26 M	4 Maij
4								
5								
2 3 5 1	j	g	11 · 19 · A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
4								
1								
2 3 5 2	xij	f e	31 · 4 · M	1 A	3 Feb.	20 Feb.	6 A	15 Maij
4								
2								
2 3 5 3	xxi ij	d	20 · 13 · M	21 M	18 Ian.	4 Feb.	22 M	30 Apr.
4								
3								
2 3 5	iiiij	c	8 · 10 · A	9 A	7 Feb.	24 Feb.	11 A	20 Maij

A . D .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
4								
2 3 5 5	xv	b	28 · 19 · M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
2 3 5 6	xx vij	A g	25 · 17 · A	16 A	19 Feb.	7 Mar.	22 A	31 Maij
2 3 5 7	vijj	f	5 · 1 · A	5 A	3 Feb.	20 Feb.	7 A	16 Maij
2 3 5 8	xix	e	25 · 10 · M	25 M	26 Ian.	12 Feb.	30 M	8 Maij
2 3 5 9	*	d	13 · 8 · A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
2 3 6 0	xj	c b	1 · 17 · A	2 A	31 Ian.	17 Feb.	3 A	12 Maij
2 3 6 1	xxi j	A	22 · 1 · M	22 M	22 Ian.	8 Feb.	26 M	4 Maij
2 3 6 2	ijj	g	9 · 23 · A	10 A	11 Feb.	28 Feb.	15 A	24 Maij

A . D .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
2 3 6 3	xii ij	f	30 · 8 · M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
2 3 6 4	xx v	e d	17 · 5 · A	18 A	15 Feb.	4 Mar.	19 A	28 Maij
2 3 6 5	vj	c	6 · 14 · A	7 A	7 Feb.	24 Feb.	11 A	20 Maij
2 3 6 6	xvi j	b	26 · 23 · M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
2 3 6 7	xx viiij	A	14 · 20 · A	15 A	12 Feb.	1 Mar.	16 A	25 Maij
2 3 6 8	ix	g f	3 · 5 · A	4 A	4 Feb.	21 Feb.	7 A	16 Maij
2 3 6 9	xx	e	23 · 14 · M	24 M	26 Ian.	12 Feb.	30 M	8 Maij
2 3 7 0	j	d	11 · 12 · A	12 A	15 Feb.	4 Mar.	19 A	28 Maij
2	xij	c	31 · 20 · M	1 A	31	17	4 A	13

A . D .	Ep act	Dom. lett. (Greg.)	Full moon (D·H·mo.)	Mo on 14	Sept uag.	Ash Wed .	Easter (nov.)	Asce nsion
3 7 1					Ian.	Feb.		Maij
2 3 7 2	xxi ij	b A	20 · 5 · M	21 M	23 Ian.	9 Feb.	26 M	4 Maij
2 3 7 3	iiij	g	8 · 3 · A	9 A	11 Feb.	28 Feb.	15 A	24 Maij
2 3 7 4	xv	f	28 · 12 · M	29 M	27 Ian.	13 Feb.	31 M	9 Maij
2 3 7 5	xx vij	e	16 · 9 · A	16 A	16 Feb.	5 Mar.	20 A	29 Maij
2 3 7 6	viiij	d c	4 · 18 · A	5 A	8 Feb.	25 Feb.	11 A	20 Maij
2 3 7 7	xix	b	25 · 3 · M	25 M	23 Ian.	9 Feb.	27 M	5 Maij
2 3 7 8	*	A	13 · 0 · A	13 A	12 Feb.	1 Mar.	16 A	25 Maij
2 3	xj	g	2 · 9 · A	2 A	4 Feb.	21 Feb.	8 A	17 Maij

A									
.	Ep	Dom. lett.	Full moon	Mo	Sept	Ash	Easter	Asce	
.	act	(Greg.)	(D·H·mo.)	on	uag.	Wed	(nov.)	nsion	
7				14		.			
9									
2	xxi	f e	21 · 18 · M	22	20	6	23 M	1	
3	j			M	Ian.	Feb.		Maij	
8									
0									
2	iiij	d	9 · 15 · A	10	8	25	12 A	21	
3				A	Feb.	Feb.		Maij	
8									
1									
2	xii	c	30 · 0 · M	30	31	17	4 A	13	
3	ij			M	Ian.	Feb.		Maij	
8									
2									
2	xx	b	17 · 22 · A	18	20	9	24 A	2	
3	v			A	Feb.	Mar.		Iunij	
8									
3									

Old-calendar leaf, A.D. 2328–2383

A									
.	Pent	Corpus	Ind	Sun. p.	Adv	Dom. lett.	Moon 14	Easter	D
.	ecost	Christi	ict.	Pent.	ent	(vet.)	(vet.)	(vet.)	i
					I				ff.
2	20	31 Maij	6	27	2	f e	15 A	20 A	3
3	Maij				Dec.				5
2									
8									
2	9	20 Iunij	7	24	1	d	4 A	5 A	0
3	Iunij				Dec.				
2									
9									
2	25	5 Iunij	8	26	30	c	24 M	28 M	7

A . D . .	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff.
3 3 0	Maij				Nou .				
2 3 3 1	17 Maij	28 Maij	9	27	29 Nou .	b	12 A	17 A	3 5
2 3 3 2	5 Iunij	16 Iunij	10	24	27 Nou .	A g	1 A	8 A	7
2 3 3 3	21 Maij	1 Iunij	11	27	3 Dec.	f	21 M	24 M	7
2 3 3 4	13 Maij	24 Maij	12	28	2 Dec.	e	9 A	13 A	3 5
2 3 3 5	2 Iunij	13 Iunij	13	25	1 Dec.	d	29 M	5 A	7
2 3 3 6	24 Maij	4 Iunij	14	26	29 Nou .	c b	17 A	24 A	3 5
2 3 3 7	6 Iunij	17 Iunij	15	24	28 Nou .	A	5 A	9 A	7
2 3	29 Maij	9 Iunij	1	25	27 Nou	g	25 M	1 A	7

A . D . 3 8	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff.
2 3 3 9	14 Maij	25 Maij	2	28	3 Dec.	f	13 A	14 A	3 5
2 3 4 0	2 Iunij	13 Iunij	3	25	1 Dec.	e d	2 A	5 A	7
2 3 4 1	25 Maij	5 Iunij	4	26	30 Nou .	c	22 M	28 M	7
2 3 4 2	17 Maij	28 Maij	5	27	29 Nou .	b	10 A	17 A	3 5
2 3 4 3	30 Maij	10 Iunij	6	25	28 Nou .	A	30 M	2 A	7
2 3 4 4	21 Maij	1 Iunij	7	27	3 Dec.	g f	18 A	21 A	3 5
2 3 4 5	10 Iunij	21 Iunij	8	24	2 Dec.	e	7 A	13 A	7
2 3 4	2 Iunij	13 Iunij	9	25	1 Dec.	d	27 M	29 M	0

A . D . 6	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff.
2 3 4 7	18 Maij	29 Maij	10	27	30 Nou .	c	15 A	18 A	3 5
2 3 4 8	6 Iunij	17 Iunij	11	24	28 Nou .	b A	4 A	9 A	7
2 3 4 9	29 Maij	9 Iunij	12	25	27 Nou .	g	24 M	25 M	0
2 3 5 0	14 Maij	25 Maij	13	28	3 Dec.	f	12 A	14 A	3 5
2 3 5 1	3 Iunij	14 Iunij	14	25	2 Dec.	e	1 A	6 A	7
2 3 5 2	25 Maij	5 Iunij	15	26	30 Nou .	d c	21 M	28 M	7
2 3 5 3	10 Maij	21 Maij	1	28	29 Nou .	b	9 A	10 A	3 5
2 3 5 4	30 Maij	10 Iunij	2	25	28 Nou .	A	29 M	2 A	7

A . D . .	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff.
2 3 5 5	22 Maij	2 Iunij	3	26	27 Nou .	g	17 A	21 A	3 5
2 3 5 6	10 Iunij	21 Iunij	4	24	2 Dec.	f c [?]	5 A	6 A	0
2 3 5 7	26 Maij	6 Iunij	5	26	1 Dec.	d	25 M	29 M	7
2 3 5 8	18 Maij	29 Maij	6	27	30 Nou .	c	13 A	18 A	3 5
2 3 5 9	7 Iunij	18 Iunij	7	24	29 Nou .	b	2 A	3 A	0
2 3 6 0	22 Maij	2 Iunij	8	26	27 Nou .	A g	22 M	25 M	7
2 3 6 1	14 Maij	25 Maij	9	28	3 Dec.	f	10 A	14 A	3 5
2 3 6 2	3 Iunij	14 Iunij	10	25	2 Dec.	e	30 M	16 A	7
2	19	30 Maij	11	27	1	d	18 A	19 A	3

A . D . .	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff.
3 6 3	Maij				Dec.				5
2 3 6 4	7 Iunij	18 Iunij	12	24	29 Nou .	c b	7 A	10 A	7
2 3 6 5	30 Maij	10 Iunij	13	25	28 Nou .	A	27 M	2 A	7
2 3 6 6	22 Maij	2 Iunij	14	26	27 Nou .	g	15 A	22 A	3 5
2 3 6 7	4 Iunij	15 Iunij	15	25	3 Dec.	f	4 A	7 A	7
2 3 6 8	26 Maij	6 Iunij	1	26	1 Dec.	e d	24 M	29 M	7
2 3 6 9	18 Maij	29 Maij	2	27	30 Nou .	c	12 A	18 A	3 5
2 3 7 0	7 Iunij	18 Iunij	3	24	29 Nou .	b	1 A	3 A	0
2 3	23 Maij	3 Iunij	4	26	28 Nou	A	21 M	26 M	7

A D D	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff.
7 1					.				
2 3 7 2	14 Maij	25 Maij	5	28	3 Dec.	g f	9 A	14 A	3 5
2 3 7 3	3 Iunij	14 Iunij	6	25	2 Dec.	e	29 M	30 M	0
2 3 7 4	19 Maij	30 Maij	7	27	1 Dec.	d	17 A	19 A	3 5
2 3 7 5	8 Iunij	19 Iunij	8	24	30 Nou .	c	5 A	11 A	7
2 3 7 6	30 Maij	10 Iunij	9	25	28 Nou .	b A	25 M	26 M	0
2 3 7 7	15 Maij	26 Maij	10	27	27 Nou .	g	13 A	15 A	3 5
2 3 7 8	4 Iunij	15 Iunij	11	25	3 Dec.	f	2 A	7 A	7
2 3 7	27 Maij	7 Iunij	12	26	2 Dec.	e	22 M	23 M	0

A										
.	D	Pent	Corpus	Ind	Sun. p.	Adv	Dom. lett.	Moon 14	Easter	D
.	.	ecost	Christi	ict.	Pent.	I	(vet.)	(vet.)	(vet.)	i
.	.	.	.	.	.	.	.	.	.	ff.
9										
2	11	22 Maij	13	28		30	d c	10 A	11 A	3
3	Maij					Nou				5
8						.				
0										
2	31	11 Iunij	14	25		29	b	30 M	3 A	7
3	Maij					Nou				
8						.				
1										
2	23	3 Iunij	15	26		28	A	18 A	23 A	3
3	Maij					Nou				5
8						.				
2										
2	12	23 Iunij	1	23		27	g	7 A	8 A	0
3	Iunij					Nou				
8						.				
3										

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The paired new-calendar (Gregorian) and old-calendar (*veteris*) leaves of the movable-feast table continue, covering the years 2384–2495. Each opening sets the new-calendar columns on the verso leaf (folios 408, 410) and continues the same block of years across to the old-calendar columns on the facing recto leaf (folio 409).

Column key for the new-calendar leaves (folios 408, 410): **Anni Domini** (A.D. year) · **Aur. Num.** (golden number) · **Epactæ** (epact) · **Lit. Dnicales Calend. Greg.** (Gregorian Dominical letter(s); leap years carry two) · **Plenilunia media Cal. Gregor.** (mean full moon: day · hour · month-letter, where A = April, M = March) · **Lunæ xiiij Calend. Gregoriani** (Luna 14; day + month-letter) · **Septuagesima** ·

Dies Cinerum (Ash Wednesday) · **Pascha Calend. novi** (new-calendar Easter; day + month-letter) · **Ascensio Domini** (Ascension).

Folio 408 (new calendar) — years 2384–2439

A	E								
. Aur.	p				Lu		Dies	Pasch	Asc
D Nu	ac	Dom.	Plenil. (D · H ·	na	Septuagesima	Dies	Ciner	a	ens
. m.	t	lett.	mo.)	14		um		nov.	io
2 10	vj	A g	6 · 7 A	7	5 Feb.	22	8 A	17	
3				A		Feb.			Mai
8									j
4									
2 11	x	f	26 · 15 M	27	27 Ian.	13	31 M	9	
3	vi			M		Feb.			Mai
8	j								j
5									
2 12	x	e	14 · 13 A	15	16 Feb.	5 Mar.	20 A	29	
3	x			A					Mai
8	vi								j
6	ij								
2 13	ix	d	3 · 22 A	4	1 Feb.	18	5 A	14	
3				A		Feb.			Mai
8									j
7									
2 14	x	c b	23 · 7 M	24	24 Ian.	10	27 M	5	
3	x			M		Feb.			Mai
8									j
8									
2 15	j	A	11 · 4 A	12	12 Feb.	1 Mar.	16 A	25	
3				A					Mai
8									j
9									
2 16	xi	g	31 · 13 M	1	4 Feb.	21	8 A	17	
3	j			A		Feb.			Mai
9									j
0									
2 17	x	f	20 · 22 M	21	20 Ian.	6 Feb.	24 M	2	

A D .	Aur. Nu m.	E p ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septuagesima	Dies Ciner um	Pasch a nov.	Asc ens io
3 9 1		xi ij			M				Mai j
2 3 9 2	18	iii j	e d	7 · 19 A	9 A	9 Feb.	26 Feb.	12 A	21 Mai j
2 3 9 3	19	x v	c	28 · 4 M	29 M	31 Ian.	17 Feb.	4 A	13 Mai j
2 3 9 4	1	x x vi j	b	16 · 2 A	16 A	13 Feb.	2 Mar.	17 A	26 Mai j
2 3 9 5	2	vi ij	A	5 · 10 A	5 A	5 Feb.	22 Feb.	9 A	18 Mai j
2 3 9 6	3	xi x	g f	24 · 19 M	25 M	28 Ian.	14 Feb.	31 M	9 Mai j
2 3 9 7	4	*	e	12 · 17 A	13 A	16 Feb.	5 Mar.	20 A	29 Mai j
2 3 9 8	5	xj	d	2 · 2 A	2 A	1 Feb.	18 Feb.	5 A	14 Mai j
2 3	6	x xi	c	22 · 10 M	22 M	24 Ian.	10 Feb.	28 M	6 Mai

A . D .	Aur. Nu m.	E p ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septuagesima	Dies Ciner um	Pasch a nov.	Asc ens io
9 9		j							j
2 4 0 0	7	iii j	b A	9 · 8 A	9 A	13 Feb.	1 Mar.	16 A	25 Mai j
2 4 0 1	8	x v	g	29 · 17 M	29 M	28 Ian.	14 Feb.	1 A	10 Mai j
2 4 0 2	9	x x vj	f	17 · 14 A	17 A	17 Feb.	6 Mar.	21 A	30 Mai j
2 4 0 3	10	vi j	e	6 · 23 A	6 A	9 Feb.	26 Feb.	13 A	22 Mai j
2 4 0 4	11	x vi ij	d c	26 · 8 M	26 M	25 Ian.	11 Feb.	28 M	6 Mai j
2 4 0 5	12	x xi x	b	14 · 6 A	14 A	13 Feb.	2 Mar.	17 A	26 Mai j
2 4 0 6	13	x	A	3 · 14 A	3 A	5 Feb.	22 Feb.	9 A	18 Mai j
2 4 0	14	x xj	g	23 · 23 M	23 M	21 Feb. [recte: 21 Ian.]	7 Feb.	25 M	3 Mai j

A D .	Aur. Nu m.	E p ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septuagesima	Dies Ciner um	Pasch a nov.	Asc ens io
7									
2 4 0 8	15	ij	f e	10 · 21 A	11 A	10 Feb.	27 Feb.	13 A	22 Mai j
2 4 0 9	16	xi ij	d	31 · 6 M	31 M	1 Feb.	18 Feb.	5 A	14 Mai j
2 4 1 0	17	x xi ij	c	19 · 3 A	18 A	21 Feb.	10 Mar.	25 A	3 Iun ij
2 4 1 1	18	v	b	8 · 12 A	8 A	6 Feb.	23 Feb.	10 A	19 Mai j
2 4 1 2	19	x vj	A g	27 · 21 M	28 M	29 Ian.	15 Feb.	1 A	10 Mai j
2 4 1 3	1	x x vi ij	f	15 · 18 A	15 A	17 Feb.	6 Mar.	21 A	30 Mai j
2 4 1 4	2	ix	e	5 · 3 A	4 A	2 Feb.	19 Feb.	6 A	15 Mai j
2 4 1 5	3	x x	d	25 · 12 M	24 M	25 Ian.	11 Feb.	29 M	7 Mai j

A D .	Aur. Nu m.	E p ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septuagesima	Dies Ciner um	Pasch a nov.	Asc ens io
2 4 1 6	4	j	ç b	12 · 9 A	12 A	14 Feb.	2 Mar.	17 A	26 Mai j
2 4 1 7	5	xi j	A	1 · 18 A	1 A	29 Ian.	15 Feb.	2 A	11 Mai j
2 4 1 8	6	x xi ij	g	22 · 3 M	21 M	21 Ian.	7 Feb.	25 M	3 Mai j
2 4 1 9	7	iii j	f	10 · 1 A	9 A	10 Feb.	27 Feb.	14 A	23 Mai j
2 4 2 0	8	x v	e d	29 · 9 M	29 M	2 Feb.	19 Feb.	5 A	14 Mai j
2 4 2 1	9	x x vj	c	17 · 7 A	17 A	14 Feb.	3 Mar.	18 A	27 Mai j
2 4 2 2	10	vi j	b	6 · 16 A	6 A	6 Feb.	23 Feb.	10 A	19 Mai j
2 4 2 3	11	x vi ij	A	27 · 1 M	26 M	29 Ian.	15 Feb.	2 A	11 Mai j
2	12	x	g f	13 · 22 A	14	18 Feb.	6 Mar.	21 A	30

A D .	Aur. Nu m.	E p ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septuagesima	Dies Ciner um	Pasch a nov.	Asc ens io
4 2 4		xi x			A				Mai j
2 4 2 5	13	x	e	3 · 7 A	3 A	2 Feb.	19 Feb.	6 A	15 Mai j
2 4 2 6	14	x xj	d	23 · 16 M	23 M	25 Ian.	11 Feb.	29 M	7 Mai j
2 4 2 7	15	ij	c	11 · 13 A	11 A	14 Feb.	3 Mar.	18 A	27 Mai j
2 4 2 8	16	xi ij	b A	30 · 22 M	31 M	30 Ian.	16 Feb.	2 A	11 Mai j
2 4 2 9	17	x xi ij	g	18 · 20 A	18 A	18 Feb.	7 Mar.	22 A	31 Mai j
2 4 3 0	18	v	f	8 · 4 A	8 A	10 Feb.	27 Feb.	14 A	23 Mai j
2 4 3 1	19	x vj	e	28 · 13 M	28 M	26 Ian.	12 Feb.	30 M	8 Mai j
2 4	1	x x	d ç	15 · 11 A	15 A	15 Feb.	3 Mar.	18 A	27 Mai

A . D .	Aur. Nu m.	E p ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septuagesima	Dies Ciner um	Pasch a nov.	Asc ens io
3 2		vi ij							j
2 4 3 3	2	ix	b	4 · 20 A	4 A	6 Feb.	23 Feb.	10 A	19 Mai j
2 4 3 4	3	x x	A	25 · 4 M	24 M	22 Ian.	8 Feb.	26 M	4 Mai j
2 4 3 5	4	j	g	13 · 2 A	12 A	11 Feb.	28 Feb.	15 A	24 Mai j
2 4 3 6	5	xi j	f e	1 · 11 A	1 A	3 Feb.	20 Feb.	6 A	15 Mai j
2 4 3 7	6	x xi ij	d	21 · 20 M	21 M	18 Ian.	4 Feb.	22 M	30 Apr .
2 4 3 8	7	iii j	ç	9 · 17 A	9 A	7 Feb.	24 Feb.	11 A	20 Mai j
2 4 3 9	8	x v	b	30 · 2 M	29 M	30 Ian.	16 Feb.	3 A	12 Mai j

Folio 409 (old calendar / continuation) — years 2384–2439

This facing leaf continues the same years. Column key: **Anni Domini** · **Pentecoste** (new-calendar Pentecost) · **Corpus Domini** (new-calendar Corpus Christi) · **Indictio** (Roman indiction) · **Diæc post Pentecosten** (Sundays after Pentecost) · **Dominica prima Adventus** (first Sunday of Advent) · **Literæ Dominicales** **Calend. veteris** (old-calendar Dominical letter(s)) · **Lunæ xiiij Calend. veteris** (old-calendar Luna 14; day + month-letter, A = April, M = March) · **Pascha** **Calendarij veteris** (old-calendar / Julian Easter) · **Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt** (days by which the new-calendar Easter differs from the old).

A									
.	D	Pente	Corpus	Ind	Dom. p.	Adv	Lit.		Pascha
.	.	coste	Domini	ict.	Pent.	entu	vet.	Luna 14 vet.	Di
.	.	.	.	.	.	s	.	.	ff.
2	27	7 Iunij	2	26	2	f e	27 M	30 M	7
3	Maij				Dec.				
8									
4									
2	19	30 Maij	3	27	1	d	15 A	19 A	3
3	Maij				Dec.				5
8									
5									
2	8	19 Iunij	4	24	30	c	4 A	11 A	7
3	Iunij				Nou.				
8									
6									
2	24	4 Iunij	5	26	29	b	24 M	27 M	7
3	Maij				Nou.				
8									
7									
2	15	26 Maij	6	27	27	A g	12 A	15 A	3
3	Maij				Nou.				5
8									
8									
2	4	15 Iun.	7	25	3	f	1 A	7 A	7
3	Iunij				Dec.				

A	D	Pente coste	Corpus Domini	Ind ict.	Dom. p. Pent.	Adv entu s	Lit. vet.	Luna 14 vet.	Pascha vet.	Di ff.
7										
2398	24 Maij	4 Iunij	1	26	29 Nou.	b	22 M		27 M	7
2399	16 Iunij	27 Iunij	2	27	28 Nou.	A	10 A		16 A	35
2400	4 Iunij	15 Iunij	3	25	3 Dec.	g f	30 M		31 M	0
2401	20 Maij	31 Maij	4	27	2 Dec.	e	18 A		20 A	35
2402	9 Iunij	20 Iunij	5	24	1 Dec.	d	7 A		12 A	7
2403	1 Iunij	12 Iunij	6	25	30 Nou.	c	27 M		28 M	0
2404	16 Maij	27 Maij	7	27	28 Nou.	b A	15 A		16 A	35
2405	5 Iunij	16 Iunij	8	24	27 Nou.	g	4 A		8 A	7

A	D	Pente	Corpus	Ind	Dom. p.	Adv	Lit.	Luna 14 vet.	Pascha	Di
.	.	coste	Domini	ict.	Pent.	entu	vet.		vet.	ff.
2	28	8 Iunij	9	26	3	f	24 M	31 M	7	
4	Maij				Dec.					
0										
6										
2	13	24 Maij	10	28	2	e	12 A	13 A	3	
4	Maij				Dec.				5	
0										
7										
2	1	12 Iunij	11	25	30	d c	1 A	4 A	7	
4	Iunij				Nou.					
0										
8										
2	24	4 Iunij	12	26	29	b	21 M	27 M	7	
4	Maij				Nou.					
0										
9										
2	13	24 Iunij	13	23	28	A	9 A	16 A	7	
4	Iunij				Nou.					
1										
0										
2	29	9 Iunij	14	25	27	g	29 A [recte: 29 M]	1 A	7	
4	Maij				Nou.					
1										
1										
2	20	31 Maij	15	27	2	f e	17 A	20 A	3	
4	Maij				Dec.				5	
1										
2										
2	9	20 Iunij	1	24	1	d	5 A	12 A	7	
4	Iunij				Dec.					
1										
3										
2	25	5 Iunij	2	26	30	c	25 M	28 M	7	

A . D . .	Pente coste	Corpus Domini	Ind ict.	Dom. p. Pent.	Adv entu s	Lit. vet.	Luna 14 vet.	Pascha vet.	Di ff.
4 1 4	Maij				Nou.				
2 4 1 5	17 Maij	28 Maij	3	27	29 Nou.	b	13 A	17 A	3 5
2 4 1 6	5 Iunij	16 Iunij	4	24	27 Nou.	A g	2 A	8 A	7
2 4 1 7	21 Maij	1 Iunij	5	27	3 Dec.	f	22 M	24 M	7
2 4 1 8	13 Maij	24 Maij	6	28	2 Dec.	e	10 A	13 A	3 5
2 4 1 9	2 Iunij	13 Iunij	7	25	1 Dec.	d	30 M	5 A	7
2 4 2 0	24 Maij	4 Iunij	8	26	29 Nou.	c b	18 A	24 A	3 5
2 4 2 1	6 Iunij	17 Iunij	9	24	28 Nou.	A	7 A	9 A	7
2 4	29 Maij	9 Iunij	10	25	27 Nou.	g	27 M	1 A	7

A . D . .	Pente coste	Corpus Domini	Ind ict.	Dom. p. Pent.	Adv entu s	Lit. vet.	Luna 14 vet.	Pascha vet.	Di ff.
0									
2 4 3 1	18 Iunij	29 Iunij	4	27	30 Nou.	c	17 A	18 A	3 5
2 4 3 2	6 Iunij	17 Iunij	5	24	28 Nou.	b A	5 A	9 A	7
2 4 3 3	29 Maij	9 Iunij	6	25	27 Nou.	g	25 M	1 A	7
2 4 3 4	14 Maij	25 Maij	7	28	3 Dec.	f	13 A	14 A	3 5
2 4 3 5	3 Iunij	14 Iunij	8	25	2 Dec.	e	2 A	6 A	7
2 4 3 6	25 Maij	5 Iunij	9	26	30 Nou.	d c	22 M	28 M	7
2 4 3 7	10 Maij	21 Maij	10	28	29 Nou.	b	10 A	17 A	4 2
2 4 3 8	30 Maij	10 Iunij	11	25	28 Nou.	A	30 M	2 A	7

A										
.						Adv				
D	Pente	Corpus	Ind	Dom. p.	entu	Lit.			Pascha	Di
.	coste	Domini	ict.	Pent.	s	vet.	Luna 14 vet.	vet.		ff.
2	22	2 Iunij	12	26	27	g	18 A	22 A	3	
4	Maij				Nou.				5	
3										
9										

Folio 410 (new calendar) — years 2440–2495

Same column key as folio 408 (new-calendar leaf).

A										
.	Aur.	Ep				Lu		Dies		Asc
D	Num	ac	Dom.	Plenil. (D · H ·	na	Septua	Cineru	Pascha		ensi
.	.	t	lett.	mo.)	14	gesima	m	nov.		o
2	9	xx	A g	16 · 23 A	17	19 Feb.	7 Mar.	22 A	31	
4		vj			A				Maij	
4										
0										
2	10	vii	f	6 · 8 A	6 A	3 Feb.	20 Feb.	7 A	16	
4									Maij	
4										
1										
2	11	xv	e	26 · 17 M	26	26 Ian.	12 Feb.	30 M	8	
4		iiij			M				Maij	
4										
2										
2	12	xx	d	14 · 15 A	14	15 Feb.	4 Mar.	19 A	28	
4		ix			A				Maij	
4										
3										
2	13	x	c b	2 · 23 A	3 A	7 Feb.	24 Feb.	10 A	19	
4									Maij	
4										
4										
2	14	xx	A	23 · 8 M	23	22 Ian.	8 Feb.	26 M	4	

A D .	Aur. Num .	Ep ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septua gesima	Dies Cineru m	Pascha nov.	Asc ensi o
4 4 5		j			M				Maij
2 4 4 6	15	ij	g	11 · 6 A	11 A	11 Feb.	28 Feb.	15 A	24 Maij
2 4 4 7	16	xii j	f	31 · 15 M	31 M	3 Feb.	20 Feb.	7 A	16 Maij
2 4 4 8	17	xx iiij	e d	18 · 12 A	18 A	16 Feb.	4 Mar.	19 A	28 Maij
2 4 4 9	18	v	c	7 · 21 A	8 A	7 Feb.	24 Feb.	11 A	20 Maij
2 4 5 0	19	xv j	b	28 · 6 M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
2 4 5 1	1	xx vii j	A	16 · 3 A	15 A	12 Feb.	1 Mar.	16 A	25 Maij
2 4 5 2	2	ix	g f	4 · 12 A	4 A	4 Feb.	21 Feb.	7 A	16 Maij
2 4	3	xx	e	24 · 21 M	24 M	26 Ian.	12 Feb.	30 M	8 Maij

A D .	Aur. Num .	Ep ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septua gesima	Dies Cineru m	Pascha nov.	Asc ensi o
5 3									
2 4 5 4	4	j	d	12 · 18 A	12 A	15 Feb.	4 Mar.	19 A	28 Maij
2 4 5 5	5	xij	c	2 · 3 A	1 A	31 Ian.	17 Feb.	4 A	13 Maij
2 4 5 6	6	xx ijj	b A	21 · 12 M	21 M	23 Ian.	9 Feb.	26 M	4 Maij
2 4 5 7	7	iiii	g	9 · 10 A	9 A	11 Feb.	28 Feb.	15 A	24 Maij
2 4 5 8	8	xv	f	29 · 18 M	29 M	27 Ian.	13 Feb.	31 M	9 Maij
2 4 5 9	9	xx vi	e	17 · 16 A	17 A	16 Feb.	5 Mar.	20 A	29 Maij
2 4 6 0	10	vij	d ç	6 · 1 A	6 A	8 Feb.	25 Feb.	11 A	20 Maij
2 4 6	11	xv ijj	b	26 · 10 M	26 M	23 Ian.	9 Feb.	27 M	5 Maij

A D .	Aur. Num .	Ep ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septua gesima	Dies Cineru m	Pascha nov.	Asc ensi o
1									
2 4 6 2	12	xx ix	A	14 · 7 A	14 A	12 Feb.	1 Mar.	16 A	25 Maij
2 4 6 3	13	x	g	3 · 16 A	3 A	4 Feb.	21 Feb.	8 A	17 Maij
2 4 6 4	14	xx j	f e	23 · 1 M	23 M	27 Ian.	13 Feb.	30 M	8 Maij
2 4 6 5	15	ij	d	10 · 22 A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
2 4 6 6	16	xii j	c	31 · 7 M	31 M	31 Ian.	17 Feb.	4 A	13 Maij
2 4 6 7	17	xx iiij	b	19 · 5 A	18 A	20 Feb.	9 Mar.	24 A	2 Iuni j
2 4 6 8	18	v	A g	7 · 13 A	8 A	12 Feb.	29 Feb.	15 A	24 Maij
2 4 6 9	19	xv j	f	27 · 22 M	28 M	27 Ian.	13 Feb.	31 M	9 Maij

A D .	Aur. Num .	Ep ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septua gesima	Dies Cineru m	Pascha nov.	Asc ensi o
2 4 7 0	1	xx vii j	e	15 · 20 A	15 A	16 Feb.	5 Mar.	20 A	29 Maij
2 4 7 1	2	ix	d	5 · 5 A	4 A	1 Feb.	18 Feb.	5 A	14 Maij
2 4 7 2	3	xx	c b	24 · 13 M	24 M	24 Ian.	10 Feb.	27 M	5 Maij
2 4 7 3	4	i	A	12 · 11 A	12 A	12 Feb.	1 Mar.	16 A	25 Maij
2 4 7 4	5	xii	g	1 · 20 A	1 A	4 Feb.	21 Feb.	8 A	17 Maij
2 4 7 5	6	xx iiij	f	22 · 5 M	21 M	20 Ian.	6 Feb.	24 M	2 Maij
2 4 7 6	7	iiij	e d	9 · 2 A	9 A	9 Feb.	26 Feb.	12 A	21 Maij
2 4 7 7	8	xv	c	29 · 11 M	29 M	31 Ian.	17 Feb.	4 A	13 Maij
2	9	xx	b	17 · 9 A	17	20 Feb.	9 Mar.	24 A	2

A D .	Aur. Num .	Ep ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septua gesima	Dies Cineru m	Pascha nov.	Asc ensi o
4 7 8		vi			A				Iuni j
2 4 7 9	10	vii	A	6 · 17 M	6 A	5 Feb.	22 Feb.	9 A	18 Maij
2 4 8 0	11	xv iiij	g f	26 · 2 M	26 M	28 Ian.	14 Feb.	31 M	9 Maij
2 4 8 1	12	xx ix	e	14 · 0 A	14 A	16 Feb.	5 Mart.	20 A	29 Maij
2 4 8 2	13	x	d	3 · 9 A	3 A	1 Feb.	18 Feb.	5 A	14 Maij
2 4 8 3	14	xx i	c	23 · 17 M	23 M	24 Ian.	10 Feb.	28 M	6 Maij
2 4 8 4	15	ij	b A	10 · 15 A	11 A	13 Feb.	1 Mar.	16 A	25 Maij
2 4 8 5	16	xii j	g	31 · 0 M	31 M	28 Ian.	14 Feb.	1 A	10 Maij
2 4	17	xx iiij	f	18 · 21 A	18 A	17 Feb.	6 Mar.	21 A	30 Maij

A D .	Aur. Num .	Ep ac t	Dom. lett.	Plenil. (D · H · mo.)	Lu na 14	Septua gesima	Dies Cineru m	Pascha nov.	Asc ensi o
8 6 2 4 8 7	18	v	e	8 · 6 A	8 A	9 Feb.	26 Feb.	13 A	22 Maij
2 4 8 8	19	xv j	d ç	27 · 15 M	28 M	1 Feb.	18 Feb.	4 A	13 Maij
2 4 8 9	1	xx vii j	b	15 · 12 A	15 A	13 Feb.	2 Mar.	17 A	26 Maij
2 4 9 0	2	ix	A	4 · 21 A	4 A	5 Feb.	22 Feb.	9 A	18 Maij
2 4 9 1	3	xx	g	25 · 6 M	24 M	21 Ian.	7 Feb.	25 M	3 Maij
2 4 9 2	4	j	f e	12 · 4 A	12 A	10 Feb.	27 Feb.	13 A	22 Maij
2 4 9 3	5	xij	d	1 · 12 A	1 A	1 Feb.	18 Feb.	5 A	14 Maij
2 4 9	6	xx iij	c	21 · 21 M	21 M	24 Ian.	10 Feb.	28 M	6 Maij

A									
.	Aur.	Ep				Lu	Dies		Asc
D	Num	ac	Dom.	Plenil. (D · H ·	na	Septua	Cineru	Pascha	ensi
.	.	t	lett.	mo.)	14	gesima	m	nov.	o
4									
2	7	iiij	b	9 · 19 A	9 A	6 Feb.	23 Feb.	10 A	19
4									Maij
9									
5									

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The paired new-/old-calendar leaves of the perpetual movable-feast table continue. This opening-set covers A.D. 2440–2551. Each year occupies one row that runs across a two-page opening: the **new-calendar (Gregorian) leaf** carries the golden number, epact, Gregorian dominical letter(s), mean full moon, Luna 14, Septuagesima, Ash Wednesday, Easter, and Ascension; the facing **old-calendar leaf** carries the movable feasts that follow Easter (Pentecost, Corpus Christi, Indiction, Sundays-after-Pentecost, first Sunday of Advent) and then a self-contained block of Julian-calendar values (Julian dominical letter[s], Julian Luna 14, Julian Easter) with the column of differences between the new and old Easter.

All dates are transcribed verbatim as printed (Roman-numeral epacts, Maij/Iunij, long-forms, the epact-30 asterisk *, and two dominical letters in Julian leap years). Numerals are not normalized.

Folio 411 — old-calendar (right-hand) leaf, A.D. 2440–2495

Columns: **Anni Domini** | **Pentecoste** | **Corpus Domini** | **Indictio** | **Dominica post Pentecosten** (Sundays after Pentecost) | **Dominica prima Adventus** | **Literæ Dominicales Calend. veteris** | **Lunæ 14 Calend. veteris** | **Pascha Calendarii veteris** | **Diff.** (days by which the new Easter differs from the old).

A n n i	Pente coste	Corpus Domini	I n d .	Dom. p.Pent .	Dom.I Adventu s	Lit. Dom. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2 4 4 0	10 Iunij	21 Iunij	1 3	24	2 Dec.	f e	7 A	13 A	7
2 4 4 1	26 Maij	6 Iunij	1 4	26	1 Dec.	d	27 M	29 M	7
2 4 4 2	18 Maij	29 Maij	1 5	27	30 Nou.	c	15 A	18 A	3 5
2 4 4 3	7 Iunij	18 Iunij	1	24	29 Nou.	b	4 A	10 A	7
2 4 4 4	29 Maij	9 Iunij	2	25	27 Nou.	A g	24 M	25 M	0
2 4 4 5	14 Maij	25 Maij	3	28	3 Dec.	f	12 A	14 A	3 5
2 4 4 6	3 Iunij	14 Iunij	4	25	2 Dec.	e	1 A	6 A	7
2 4 4 7	26 Maij	6 Iunij	5	26	1 Dec.	d	21 M	22 M	0
2	7	18 Iunij	6	24	29 Nou.	c b	9 A	10 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom. p.Pent .	Dom.I Adventu s	Lit. Dom. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
4 4 8	Iunij								
2 4 4 9	30 Maij	10 Iunij	7	25	28 Nou.	A	29 M	2 A	7
2 4 5 0	22 Maij	2 Iunij	8	26	27 Nou.	g	17 A	22 A	3 5
2 4 5 1	4 Iunij	15 Iunij	9	25	3 Dec.	f	5 A	7 A	7
2 4 5 2	26 Maij	6 Iunij	1 0	26	1 Dec.	e d	25 M	29 M	7
2 4 5 3	18 Maij	29 Maij	1 1	27	30 Nou.	c	13 A	18 A	3 5
2 4 5 4	7 Iunij	18 Iunij	1 2	24	29 Nou.	b	2 A	3 A	0
2 4 5 5	23 Maij	3 Iunij	1 3	26	28 Nou.	A	22 M	26 M	7
2 4	14 Maij	25 Maij	1 4	28	3 Dec.	g f	10 A	14 A	3 5

A n n i	Pente coste	Corpus Domini	I n d .	Dom. p.Pent .	Dom.I Adventu s	Lit. Dom. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
5 6									
2 4 5 7	3 Iunij	14 Iunij	1 5	25	2 Dec.	e	30 M	6 A	7
2 4 5 8	19 Maij	30 Maij	1	27	1 Dec.	d	18 A	19 A	3 5
2 4 5 9	8 Iunij	19 Iunij	2	24	30 Nou.	c	7 A	11 A	7
2 4 6 0	30 Maij	10 Iunij	3	25	28 Nou.	b A	27 M	2 A	7
2 4 6 1	15 Maij	26 Maij	4	27	27 Nou.	g	15 A	22 A	4 2
2 4 6 2	4 Iunij	15 Iunij	5	25	3 Dec.	f	4 A	7 A	7
2 4 6 3	27 Maij	7 Iunij	6	26	2 Dec.	e	24 M	30 M	7
2 4 6	18 Maij	29 Maij	7	27	30 Nou.	d c	12 A	18 A	3 5

A n n i	Pente coste	Corpus Domini	I n d .	Dom. p.Pent .	Dom.I Adventu s	Lit. Dom. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
4									
2 4 6 5	31 Maij	11 Iunij	8	25	29 Nou.	b	1 A	3 A	7
2 4 6 6	23 Maij	3 Iunij	9	26	28 Nou.	A	21 M	26 M	7
2 4 6 7	12 Iunij	23 Iunij	1 0	23	27 Nou.	g	9 A	15 A	7
2 4 6 8	3 Iunij	14 Iunij	1 1	25	2 Dec.	f e	29 M	30 M	0
2 4 6 9	19 Maij	30 Maij	1 2	27	1 Dec.	d	17 A	19 A	3 5
2 4 7 0	8 Iunij	19 Iunij	1 3	24	30 Nou.	c	5 A	11 A	7
2 4 7 1	24 Maij	4 Iunij	1 4	26	29 Nou.	b	25 M	27 M	7
2 4 7 2	15 Maij	26 Maij	1 5	27	27 Nou.	A g	13 A	15 A	3 5

A n n i	Pente coste	Corpus Domini	I n d .	Dom. p.Pent .	Dom.I Adventu s	Lit. Dom. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2 4 7 3	4 Iunij	15 Iunij	1	25	3 Dec.	f	2 A	7 A	7
2 4 7 4	27 Maij	7 Iunij	2	26	2 Dec.	e	22 M	23 M	0
2 4 7 5	12 Iunij	23 Iunij	3	28	1 Dec.	d	10 A	12 A	3 5
2 4 7 6	31 Maij	11 Iunij	4	25	29 Nou.	c b	30 M	3 A	7
2 4 7 7	23 Maij	3 Iunij	5	26	28 Nou.	A	18 A	23 A	3 5
2 4 7 8	12 Iunij	23 Iunij	6	23	27 Nou.	g	7 A	8 A	0
2 4 7 9	28 Maij	8 Iunij	7	26	3 Dec.	f	27 M	31 M	7
2 4 8 0	19 Maij	30 Maij	8	27	1 Dec.	e d	15 A	19 A	3 5
2	8	19 Iunij	9	24	30 Nou.	c	4 A	11 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom. p.Pent .	Dom.I Adventu s	Lit. Dom. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
4 8 1	Iunij								
2 4 8 2	24 Maij	4 Iunij	1 0	26	29 Nou.	b	24 M	27 M	7
2 4 8 3	16 Maij	27 Maij	1 1	27	28 Nou.	A	12 A	16 A	3 5
2 4 8 4	4 Iunij	15 Iunij	1 2	25	3 Dec.	g f	1 A	7 A	7
2 4 8 5	20 Maij	31 Maij	1 3	27	2 Dec.	e	21 M	23 M	7
2 4 8 6	9 Iunij	20 Maij [recte: 20 Iunij]	1 4	24	1 Dec.	d	9 A	12 A	7
2 4 8 7	1 Iunij	12 Iunij	1 5	25	30 Nou.	c	29 M	4 A	7
2 4 8 8	23 Maij	3 Iunij	1	26	28 Nou.	b A	17 A	23 A	3 5
2 4	5 Iunij	16 Iunij	2	24	27 Nou.	g	5 A	8 A	7

A			I					D
n			n	Dom.	Dom.I	Lit.		i
n	Pente	Corpus Domini	d	p.Pent	Adventu	Dom.	Luna	Pasch
i	coste		.	.	s	vet.	14 vet.	ff
8								.
9								
2	28	8 Iunij	3	26	3 Dec.	f	25 M	31 M
4	Maij							7
9								
0								
2	13	24 Maij	4	28	2 Dec.	e	13 A	20 A
4	Maij							4
9								2
1								
2	1	12 Iunij	5	25	30 Nou.	d c	2 A	4 A
4	Iunij							7
9								
2								
2	24	4 Iunij	6	26	29 Nou.	b	22 M	27 M
4	Maij							7
9								
3								
2	16	27 Maij	7	28	28 Nou.	A	10 A	16 A
4	Maij							3
9								5
4								
2	29	9 Iunij	8	25	27 Nou.	g	30 M	1 A
4	Maij							7
9								
5								

December. Two dominical letters mark Julian leap years (every year divisible by 4: 2440, 2444, ... 2492). Corpus Domini = Pentecost + 11 throughout; the printed **2486 "20 Maij" is a month-slip** — Pentecost falls 9 Iunij, so Corpus is 20 **Iunij** (flagged [recte:]).

Folio 412 — new-calendar (Gregorian) leaf, A.D. 2496–2551

Columns: **Anni Domini** | **Aur. Num.** (golden number) | **Epactæ** | **Literæ Dominicales Caled. Gregor.** | **Plenilunia media Cal. Gregor.** (D · H · month — mean full moon: day · hour · month) | **Lunæ 14 Calendarii Gregoriani** | **Septuagesima** | **Dies Cinerum** (Ash Wednesday) | **Pascha Calend. novi** | **Ascensio Domini.**

A n n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
2 4 9 6	xv	A g	29 · 4 · M	29 M	29 Ian.	15 Febr.	1 A	10 Maij
2 4 9 7	xx vi	f	17 · 1 · A	17 A	17 Febr.	6 Mart.	21 A	30 Maij
2 4 9 8	vii	e	6 · 10 · A	6 A	9 Febr.	26 Febr.	13 A	22 Maij
2 4 9 9	xvi ii	d	26 · 19 · M	26 M	25 Ian.	11 Febr.	29 M	7 Maij
2 5 0 0	xx viii	c	15 · 16 · A	15 A	14 Febr.	3 Mart.	18 A	27 Maij
2 5 0 1	ix	b	4 · 1 · A	4 A	6 Febr.	23 Febr.	10 A	19 Maij
2 5	xx	A	24 · 10 · M	24 M	22 Ian.	8 Febr.	26 M	4 Maij

An n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
0 2								
2 5 0 3	i	g	12 · 7 · A	12 A	11 Febr.	28 Febr.	15 A	24 Maij
2 5 0 4	xii	f e	31 · 16 · M	1 A	3 Febr.	20 Febr.	6 A	15 Maij
2 5 0 5	xxi ii	d	21 · 1 · M	21 M	18 Ian.	4 Febr.	22 M	30 Apr.
2 5 0 6	iiii	c	8 · 23 · A	9 A	7 Febr.	24 Febr.	11 A	20 Maij
2 5 0 7	xv	b	29 · 7 · M	29 M	30 Ian.	16 Febr.	3 A	12 Maij
2 5 0 8	xx vii	A g	16 · 5 · A	16 A	19 Febr.	7 Mart.	22 A	31 Maij
2 5 0 9	viii	f	5 · 14 · A	5 A	3 Febr.	20 Febr.	7 A	16 Maij
2 5 1	xix	e	25 · 23 · M	25 M	26 Ian.	12 Febr.	30 M	8 Maij

An n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
0								
2 5 1 1	*	d	13 · 20 · A	13 A	15 Febr.	4 Mart.	19 A	28 Maij
2 5 1 2	xi	c b	2 · 5 · A	2 A	31 Ian.	17 Febr.	3 A	12 Maij
2 5 1 3	xxi i	A	22 · 14 · M	22 M	22 Ian.	8 Febr.	26 M	4 Maij
2 5 1 4	iii	g	10 · 11 · A	10 A	11 Febr.	28 Febr.	15 A	24 Maij
2 5 1 5	xiii i	f	30 · 20 · M	30 M	27 Ian.	13 Febr.	31 M	9 Maij
2 5 1 6	xx v	e d	17 · 18 · A	18 A	16 Febr.	4 Mart.	19 A	28 Maij
2 5 1 7	vi	c	7 · 2 · A	7 A	7 Febr.	24 Febr.	11 A	20 Maij
2 5 1 8	xvi i	b	27 · 11 · M	27 M	30 Ian.	16 Febr.	3 A	12 Maij

An n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
2 5 1 9	xx viii	A	15 · 9 · A	15 A	12 Febr.	1 Mart.	16 A	25 Maij
2 5 2 0	ix	g f	3 · 18 · A	4 A	4 Febr.	21 Febr.	7 A	16 Maij
2 5 2 1	xx	e	24 · 2 · M	24 M	26 Ian.	12 Febr.	30 M	8 Maij
2 5 2 2	i	d	12 · 0 · A	12 A	15 Febr.	4 Mart.	19 A	28 Maij
2 5 2 3	xii	c	1 · 9 · A	1 A	31 Ian.	17 Febr.	4 A	13 Maij
2 5 2 4	xxi ii	b A	20 · 18 · M	21 M	23 Ian.	9 Febr.	26 M	4 Maij
2 5 2 5	iiii	g	8 · 15 · A	9 A	11 Febr.	28 Febr.	15 A	24 Maij
2 5 2 6	xv	f	29 · 0 · M	29 M	27 Ian.	13 Febr.	31 M	9 Maij
2	xx	e	16 · 21 · A	16	16 Febr.	5 Mart.	20 A	29

An n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
5 2 7	vii			A				Maij
2 5 2 8	viii	d c	5 · 6 · A	5 A	8 Febr.	25 Febr.	11 A	20 Maij
2 5 2 9	xix	b	25 · 15 · M	25 M	23 Ian.	9 Febr.	27 M	5 Maij
2 5 3 0	*	A	13 · 13 · A	13 A	12 Febr.	1 Mart.	16 A	25 Maij
2 5 3 1	xi	g	2 · 21 · A	2 A	4 Febr.	21 Febr.	8 A	17 Maij
2 5 3 2	xxi i	f e	22 · 6 · M	22 M	20 Ian.	6 Febr.	23 M	1 Maij
2 5 3 3	iii	d	10 · 4 · A	10 A	8 Febr.	25 Febr.	12 A	21 Maij
2 5 3 4	xiii i	c	30 · 13 · M	30 M	31 Ian.	17 Febr.	4 A	13 Maij
2 5	xx v	b	18 · 10 · A	18 A	20 Febr.	9 Mart.	24 A	2 Iunij

An n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
3 5 2 5 3 6	vi	A g	6 · 19 · A	7 A	5 Febr.	22 Febr.	8 A	17 Maij
2 5 3 7	xvi i	f	27 · 4 · M	27 M	27 Ian.	13 Febr.	31 M	9 Maij
2 5 3 8	xx viii	e	15 · 1 · A	15 A	16 Febr.	5 Mart.	20 A	29 Maij
2 5 3 9	ix	d	4 · 10 · A	4 A	1 Febr.	18 Febr.	5 A	14 Maij
2 5 4 0	xx	c b	23 · 19 · M	24 M	24 Ian.	10 Febr.	27 M	5 Maij
2 5 4 1	i	A	11 · 16 · A	12 A	12 Febr.	1 Mart.	16 A	25 Maij
2 5 4 2	xii	g	1 · 1 · A	1 A	4 Febr.	21 Febr.	8 A	17 Maij
2 5 4	xxi ii	f	21 · 10 · M	21 M	20 Ian.	6 Febr.	24 M	2 Maij

An n i	Ep act	Lit. Dom.	Plenilunium (D·H·m)	Lun a 14	Septuag esima	Dies Cineru m	Pascha novum	Asce nsio
3								
2 5 4 4	iiii	e d	8 · 8 · A	9 A	9 Febr.	26 Febr.	12 A	21 Maij
2 5 4 5	xv	c	28 · 16 · M	29 M	31 Ian.	17 Febr.	4 A	13 Maij
2 5 4 6	xx vii	b	16 · 14 · A	16 A	13 Febr.	2 Mart.	17 A	26 Maij
2 5 4 7	viii	A	5 · 23 · A	5 A	5 Febr.	22 Febr.	9 A	18 Maij
2 5 4 8	xix	g f	25 · 8 · M	25 M	28 Ian.	14 Febr.	31 M	9 Maij
2 5 4 9	*	e	13 · 5 · A	13 A	16 Febr.	5 Mart.	20 A	29 Maij
2 5 5 0	xi	d	2 · 14 · A	2 A	1 Febr.	18 Febr.	5 A	14 Maij
2 5 5 1	xxi i	c	22 · 23 · M	22 M	24 Ian.	10 Febr.	28 M	6 Maij

month (M/A). The H value was read twice, from two overlapping views of the leaf, and agreed in every row, so the hours here carry the usual reading confidence rather than being pattern-derived; even so, they remain the least certain values on the leaf. **The epact set steps down by 1 at 2500** (the Gregorian centurial solar equation: 2500 is a common year), so GN 12 shows epact xxviii (28) rather than the 29 a naive +11 continuation would give; from 2500 on the +11 Metonic run (saltus +12 at GN 19→1) is internally regular. Epact 30 is printed as the asterisk * (GN 4).

Folio 413 — old-calendar (right-hand) leaf, A.D. 2496–2551

Columns as folio 411. The Pentecost / Corpus / Indiction / Sundays-after-Pentecost / Advent columns continue the **Gregorian** reckoning of the facing leaf (Pentecost = new Easter + 49); the final block (Julian dominical letter[s], Julian Luna 14, Julian Easter, Diff.) is the *veteris* material.

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
2 4 9 6	20 Maij	31 Maij	9	27	2 Dec.	f e	18 A	20 A	3 5
2 4 9 7	9 Iunij	20 Iunij	1 0	24	1 Dec.	d	7 A	12 A	7
2 4 9 8	1 Iunij	12 Iunij	1 1	25	30 Nou.	c	27 M	28 M	0
2 4 9 9	17 Maij	28 Maij	1 2	27	29 Nou.	b	15 A	17 A	3 5
2 5 0	6 Iunij	17 Iunij	1 3	24	27 Nou.	A g	4 A	8 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
0									
2 5 0 1	29 Maij	9 Iunij	1 4	25	3 Dec.	f	24 M	31 M	7
2 5 0 2	14 Maij	25 Maij	1 5	28	2 Dec.	e	12 A	13 A	3 5
2 5 0 3	3 Iunij	14 Iunij	1	25	1 Dec.	d	1 A	5 A	7
2 5 0 4	25 Maij	5 Iunij	2	26	29 Nou.	c b	21 M	27 M	7
2 5 0 5	10 Maij	21 Maij	3	28	28 Nou.	A	9 A	16 A	4 2
2 5 0 6	30 Maij	10 Iunij	4	25	27 Nou.	g	29 M	1 A	7
2 5 0 7	22 Maij	2 Iunij	5	26	3 Dec.	f	17 A	21 A	3 5
2 5 0 8	10 Iunij	21 Iunij	6	24	2 Dec.	e d	5 A	12 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
2 5 0 9	26 Maij	6 Iunij	7	26	1 Dec.	c	25 M	28 M	7
2 5 1 0	18 Maij	29 Maij	8	27	30 Nou.	b	13 A	17 A	3 5
2 5 1 1	7 Iunij	18 Iunij	9	24	29 Nou.	A	2 A	9 A	7
2 5 1 2	22 Maij	2 Iunij	1 0	26	27 Nou.	g f	22 M	24 M	7
2 5 1 3	14 Maij	25 Maij	1 1	28	3 Dec.	e	10 A	13 A	3 5
2 5 1 4	3 Iunij	14 Iunij	1 2	25	2 Dec.	d	30 M	5 A	7
2 5 1 5	19 Maij	30 Maij	1 3	27	1 Dec.	c	18 A	25 A	4 2
2 5 1 6	7 Iunij	18 Iunij	1 4	24	29 Nou.	b A	7 A	9 A	7
2	30	10 Iunij	1	25	28 Nou.	g	27 M	1 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
5 1 7	Maij		5						
2 5 1 8	22 Maij	2 Iunij	1	26	27 Nou.	f	15 A	21 A	3 5
2 5 1 9	4 Iunij	15 Iunij	2	25	3 Dec.	e	4 A	6 A	7
2 5 2 0	26 Maij	6 Iunij	3	26	1 Dec.	d c	24 M	28 M	7
2 5 2 1	18 Maij	29 Maij	4	27	30 Nou.	b	12 A	17 A	3 5
2 5 2 2	7 Iunij	18 Iunij	5	24	29 Nou.	A	1 A	2 A	0
2 5 2 3	23 Maij	3 Iunij	6	26	28 Nou.	g	21 M	25 M	7
2 5 2 4	14 Maij	25 Maij	7	28	3 Dec.	f e	9 A	13 A	3 5
2 5	3 Iunij	14 Iunij	8	25	2 Dec.	d	29 M	5 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
2 5									
2 5 2 6	19 Maij	30 Maij	9	27	1 Dec.	c	17 A	18 A	3 5
2 5 2 7	8 Iunij	19 Iunij	1 0	24	30 Nou.	b	5 A	10 A	7
2 5 2 8	30 Maij	10 Iunij	1 1	25	28 Nou.	A g	25 M	1 A	7
2 5 2 9	15 Maij	26 Maij	1 2	27	27 Nou.	f	13 A	14 A	3 5
2 5 3 0	4 Iunij	15 Iunij	1 3	25	3 Dec.	e	2 A	6 A	7
2 5 3 1	27 Maij	7 Iunij	1 4	26	2 Dec.	d	22 M	29 M	7
2 5 3 2	11 Maij	22 Maij	1 5	28	30 Nou.	c b	10 A	17 A	4 2
2 5 3	31 Maij	11 Iunij	1	25	29 Nou.	A	30 M	2 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
3									
2 5 3 4	23 Maij	3 Iunij	2	26	28 Nou.	g	18 A	22 A	3 5
2 5 3 5	12 Iunij	23 Iunij	3	23	27 Nou.	f	7 A	14 A	7
2 5 3 6	27 Maij	7 Iunij	4	26	2 Dec.	e d	27 M	29 M	7
2 5 3 7	19 Maij	30 Maij	5	27	1 Dec.	c	15 A	18 A	3 5
2 5 3 8	8 Iunij	19 Iunij	6	24	30 Nou.	b	4 A	10 A	7
2 5 3 9	24 Maij	4 Iunij	7	26	29 Nou.	A	24 M	26 M	7
2 5 4 0	15 Maij	26 Maij	8	27	27 Nou.	g f	12 A	14 A	3 5
2 5 4 1	4 Iunij	15 Iunij	9	25	3 Dec.	e	1 A	6 A	7

A n n i	Pente coste	Corpus Domini	I n d .	Dom.p. Pent.	Dom.I Adventus	Lit. Dom. vet.	Luna 14 vet.	Pascha vet.	Di ff.
2 5 4 2	27 Maij	7 Iunij	1 0	26	2 Dec.	d	21 M	22 M	0
2 5 4 3	12 Maij	23 Maij	1 1	28	1 Dec.	c	9 A	11 A	3 5
2 5 4 4	31 Maij	11 Iunij	1 2	25	29 Nou.	b A	29 M	2 A	7
2 5 4 5	23 Maij	3 Iunij	1 3	26	28 Nou.	g	17 A	22 A	3 5
2 5 4 6	5 Iunij	16 Iunij	1 4	24	27 Nou.	f	5 A	7 A	7
2 5 4 7	28 Maij	8 Iunij	1 5	26	3 Dec.	e	25 M	30 M	7
2 5 4 8	19 Maij	30 Maij	1	27	1 Dec.	d c	13 A	18 A	3 5
2 5 4 9	8 Iunij	19 Iunij	2	24	30 Nou.	b	2 A	3 A	0
2	24	4 Iunij	3	26	29 Nou.	A	22 M	26 M	7

A			I						
n			n						
n	Pente	Corpus	d	Dom.p.	Dom.I	Lit. Dom.	Luna 14	Pascha	Di
i	coste	Domini	.	Pent.	Adventus	vet.	vet.	vet.	ff.
5	Maij								
5									
0									
2	16	27 Maij	4	27	28 Nou.	g	10 A	15 A	3
5	Maij								5
5									
1									

year, whereas on the facing Gregorian leaf it is a common year with the single letter c — the intended new/old-calendar divergence at the century boundary, not a compositor error. The Diff. column values (0, 7, 35, 42) reconcile exactly with the two Easters once the Gregorian–Julian solar offset is applied (16 days for 2496–2499, 17 days from 2500). Two Julian dominical letters mark 2496, 2500, 2504, ... 2548.

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The *Table of the Movable Feasts* continues, laid out across facing leaves. Each opening pairs a left leaf carrying the **new (Gregorian) calendar** festal data (folios 414 and 416 below) with a right leaf carrying the feasts that follow Easter together with the **old (Julian) calendar** Easter reckoning for comparison (folio 415 below). In the full-moon, *Luna 14*, and Easter columns the month letter **A** = *Aprilis* (April) and **M** = *Martius* (March); the mean full moon is given as day · hour · month. Julian leap years carry two dominical letters.

Folio 414 — new calendar (*Calend. Greg.*), A.D. 2552–2607

Columns: Year of the Lord | Golden number [*Aur. Num.*] | Epact | Gregorian dominical letter(s) | Mean full moon, Gregorian calendar (day. hour, month) | *Luna 14*, Gregorian calendar | Septuagesima | Ash Wednesday [*Dies Cinerum*] | Easter, new calendar [*Pascha Calend. noui*] | Ascension.

			D o m .						
A. D.	Gol d.	Epa ct		Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
25 52	7	iii	b A	9. 20 A	10 A	13 Febr.	1 Mart.	16 A	25 Maij
25 53	8	xiii	g	30. 5 M	30 M	28 Ian.	14 Febr.	1 A	10 Maij
25 54	9	xxv	f	17. 3 A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
25 55	10	vi	e	8. 12 A	7 A	9 Febr.	26 Febr.	13 A	22 Maij
25 56	11	xvii	d c	26. 20 M	27 M	25 Ian.	11 Febr.	28 M	6 Maij
25 57	12	xxvi ii	b	14. 18 A	15 A	13 Febr.	2 Mart.	17 A	26 Maij
25 58	13	ix	A	4. 3 A	4 A	5 Febr.	22 Febr.	9 A	18 Maij
25 59	14	xx	g	24. 11 M	24 M	21 Ian.	7 Febr.	25 M	3 Maij
25 60	15	i	f e	11. 9 A	12 A	10 Febr.	27 Febr.	13 A	22 Maij
25 61	16	xii	d	31. 18 M	1 A	1 Febr.	18 Febr.	5 A	14 Maij
25 62	17	xxiii	c	21. 2 M	21 M	24 Ian.	10 Febr.	28 M	6 Maij
25 63	18	iiii	b	9. 0 A	9 A	6 Febr.	23 Febr.	10 A	19 Maij
25 64	19	xv	A g	28. 9 M	29 M	29 Ian.	15 Febr.	1 A	10 Maij
25 65	1	xxvi i	f	16. 7 A	16 A	17 Febr.	6 Mart.	21 A	30 Maij
25 66	2	viii	e	5. 15 A	5 A	2 Febr.	19 Febr.	6 A	15 Maij
25	3	xix	d	26. 0 M	25 M	25 Ian.	11	29	7 Maij

A. D.	Gol d.	Epa ct	D o m .	Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
67							Febr.	M	
25 68	4	*	c b	12. 22 A	13 A	14 Febr.	2 Mart.	17 A	26 Maij
25 69	5	xi	A	2. 7 A	2 A	5 Febr.	22 Febr.	9 A	18 Maij
25 70	6	xxii	g	22. 15 M	22 M	21 Ian.	7 Febr.	25 M	3 Maij
25 71	7	iii	f	10. 13 A	10 A	10 Febr.	27 Febr.	14 A	23 Maij
25 72	8	xiii	e d	29. 22 M	30 M	2 Febr.	19 Febr.	5 A	14 Maij
25 73	9	xxv	c	17. 19 A	18 A	21 Febr.	10 Mart.	25 A	3 Iunij
25 74	10	vi	b	7. 4 A	7 A	6 Febr.	23 Febr.	10 A	19 Maij
25 75	11	xvii	A	27. 13 M	27 M	29 Ian.	15 Febr.	2 A	11 Maij
25 76	12	xxvi ii	g f	14. 10 A	15 A	18 Febr.	6 Mart.	21 A	30 Maij
25 77	13	ix	e	3. 19 A	4 A	2 Febr.	19 Febr.	6 A	15 Maij
25 78	14	xx	d	24. 4 M	24 M	25 Ian.	11 Febr.	29 M	7 Maij
25 79	15	i	c	12. 2 A	12 A	14 Febr.	2 Mart.	18 A	27 Maij
25 80	16	xii	b A	31. 10 M	1 A	30 Ian.	16 Febr.	2 A	11 Maij
25 81	17	xxiii	g	20. 19 M	21 M	21 Ian.	7 Febr.	25 M	3 Maij
25 82	18	iiii	f	8. 17 A	9 A	10 Febr.	27 Febr.	14 A	23 Maij

A. D.	Gol d.	Epa ct	D o m	Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
			.						
25 83	19	xv	e	29. 2 M	29 M	26 Ian.	12 Febr.	30 M	8 Maij
25 84	1	xxvi i	d c	15. 23 A	16 A	15 Febr.	3 Mart.	18 A	27 Maij
25 85	2	viii	b	5. 8 A	5 A	6 Febr.	23 Febr.	10 A	19 Maij
25 86	3	xix	A	25. 17 M	25 M	22 Ian.	8 Febr.	26 M	4 Maij
25 87	4	*	g	13. 14 A	13 A	11 Febr.	28 Febr.	15 A	24 Maij
25 88	5	xi	f e	1. 23 A	2 A	3 Febr.	20 Febr.	6 A	15 Maij
25 89	6	xxii	d	22. 8 M	22 M	25 Ian.	11 Febr.	29 M	7 Maij
25 90	7	iii	c	10. 5 A	10 A	7 Febr.	24 Febr.	11 A	20 Maij
25 91	8	xiii	b	30. 14 M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
25 92	9	xxv	A g	17. 12 A	18 A	19 Febr.	7 Mart.	22 A	31 Maij
25 93	10	vi	f	6. 21 M	7 A	10 Febr.	27 Febr.	14 A	23 Maij
25 94	11	xvii	e	27. 5 M	27 M	26 Ian.	12 Febr.	30 M	8 Maij
25 95	12	xxvi ii	d	15. 3 A	15 A	15 Febr.	4 Mart.	19 A	28 Maij
25 96	13	ix	c b	3. 12 A	4 A	7 Febr.	24 Febr.	10 A	19 Maij
25 97	14	xx	A	23. 21 M	24 M	22 Ian.	8 Febr.	26 M	4 Maij

D o									
A. D.	Gol d.	Epa ct	m .	Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
25 98	15	i	g	11. 18 A	12 A	11 Febr.	28 Febr.	15 A	24 Maij
25 99	16	xii	f	1. 3 A	1 A	3 Febr.	20 Febr.	7 A	16 Maij
26 00	17	xxii	e	22. 12 M	22 M	19 Ian.	5 Febr.	23 M	1 Maij
26 01	18	iii	d	9. 9 A	10 A	8 Febr.	25 Febr.	12 A	21 Maij
26 02	19	xiii	c	29. 18 M	30 M	31 Ian.	17 Febr.	4 A	13 Maij
26 03	1	xxvi	b	17. 16 A	17 A	20 Febr.	9 Mart.	24 A	2 Iunij
26 04	2	vii	A g	6. 0 A	6 A	5 Febr.	22 Febr.	8 A	17 Maij
26 05	3	xviii	f	26. 9 M	26 M	27 Ian.	13 Febr.	31 M	9 Maij
26 06	4	xxix	e	14. 7 A	14 A	12 Febr.	1 Mart.	20 A	29 Maij
26 07	5	x	d	3. 16 A	3 A	4 Febr.	18 Febr.	5 A	14 Maij

Note — the epact drops by one at A.D. 2600 (the Gregorian lunar/solar equation at the century year): golden number 17, which yields epact 23 in the years before 2600, yields epact 22 from 2600 on, and the whole cycle follows suit through folio 416. At 2600 the Gregorian dominical column carries a **single** letter (e) — 2600 is a common year in the new calendar — whereas the Julian column on folio 415 carries two (see below).

Folio 415 — old calendar (*Calend. vetus*), A.D. 2552–2607

Columns: Year of the Lord | Pentecost [*Pentecoste*] | Corpus Christi [*Corpus Domini*] | Indiction [*Indictio*] | Sundays after Pentecost [*Dñicæ post Pentecosten*] | First Sunday of Advent [*Dominica prima Aduentus*] | dominical letter(s) of the old calendar [*Literæ Dñicales Calendarij veteris*] | *Luna 14* of the old calendar |

Easter, old calendar [*Pascha Calendarij veteris*] | Days by which new-calendar Easter differs from old-calendar Easter [*Diff.*].

A . D .	Pentecost	Corpus Chr.	I . n . d .	Sun.af . t.P.	1st Adv.	Dom. (old)	Luna 14 (old)	Easter (old)	Diff.
2 5 5 2	4 Iunij	15 Iunij	5	25	3 Dec.	f e	30 M	6 A	7
2 5 5 3	20 Maij	31 Maij	6	27	2 Dec.	d	18 A	19 A	3 5
2 5 5 4	9 Iunij	20 Iunij	7	24	1 Dec.	c	7 A	11 A	7
2 5 5 5	1 Iunij	12 Iunij	8	25	30 Nou.	b	27 M	3 A	7
2 5 5 6	16 Maij	27 Maij	9	27	28 Nou.	A g	15 A	22 A	4 2
2 5 5 7	5 Iunij	16 Iunij	1 0	24	27 Nou.	f	4 A	7 A	7
2 5 5 8	28 Maij	8 Iunij	1 1	26	3 Dec.	e	24 M	30 M	7
2 5 5	13 Maij	24 Maij	1 2	28	2 Dec.	d	12 A	19 A	4 2

A . D .	Pentecost	Corpus Chr.	I . n . d .	Sun.af . t.P.	1st Adv.	Dom. (old)	Luna 14 (old)	Easter (old)	Diff.
9									
2 5 6 0	1 Iunij	14 Iunij [recte: 12 Iunij]	1 3	25	30 Nou.	c b	1 A	3 A	7
2 5 6 1	24 Maij	4 Iunij	1 4	26	29 Nou.	A	21 M	26 M	7
2 5 6 2	16 Maij	27 Maij	1 5	28	28 Nou.	g	9 A	15 A	3 5
2 5 6 3	29 Maij	9 Iunij	1	25	27 Nou.	f	29 M	31 M	7
2 5 6 4	20 Maii	31 Maij	2	27	2 Dec.	e d	17 A	19 A	3 5
2 5 6 5	9 Iunij	20 Iunij	3	24	1 Dec.	c	5 A	11 A	7
2 5 6 6	25 Maij	5 Iunij	4	26	30 Nou.	b	25 M	27 M	7
2 5 6 7	17 Maij	28 Maij	5	27	29 Nou.	A	13 A	16 A	3 5

A . D .	Pente cost	Corpus Chr.	I n d .	Sun.af t.P.	1st Adv.	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
2 5 6 8	5 Iunij	16 Iunij	6	24	27 Nou.	g f	2 A	7 A	7
2 5 6 9	28 Maij	8 Iunij	7	26	3 Dec.	e	22 M	23 M	0
2 5 7 0	13 Maij	24 Maij	8	28	2 Dec.	d	10 A	12 A	3 5
2 5 7 1	2 Iunij	13 Iunij	9	25	1 Dec.	c	30 M	4 A	7
2 5 7 2	24 Maij	4 Iunij	1 0	26	29 Nou.	b A	18 A	23 A	3 5
2 5 7 3	13 Iunij	24 Iunij	1 1	23	28 Nou.	g	7 A	8 A	0
2 5 7 4	29 Maij	9 Iunij	1 2	25	27 Nou.	f	27 M	31 M	7
2 5 7 5	21 Maij	1 Iunij	1 3	27	3 Dec.	e	15 A	20 A	3 5
2	9	20 Iunij	1	24	1	d c	4 A	11 A	7

A . D .	Pente cost	Corpus Chr.	I n d .	Sun.af t.P.	1st Adv.	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
5 7 6	Iunij		4		Dec.				
2 5 7 7	25 Maij	5 Iunij	1 5	26	30 Nou.	b	24 M	27 M	7
2 5 7 8	17 Maij	28 Maij	1	27	29 Nou.	A	12 A	16 A	3 5
2 5 7 9	6 Iunij	17 Iunij	2	24	28 Nou.	g	1 A	8 A	7
2 5 8 0	21 Maij	1 Iunij	3	27	3 Dec.	f e	21 M	23 M	7
2 5 8 1	13 Maij	24 Maij	4	28	2 Dec.	d	9 A	12 A	3 5
2 5 8 2	2 Iunij	13 Iunij	5	25	1 Dec.	c	29 M	4 A	7
2 5 8 3	18 Maij	29 Maij	6	27	30 Nou.	b	17 A	24 A	4 2
2 5	6 Iunij	17 Iunij	7	24	28 Nou.	A g	5 A	8 A	7

A . D .	Pentecost	Corpus Chr.	In .	Sun.af . t.P.	1st Adv.	Dom. (old)	Luna 14 (old)	Easter (old)	Diff.
84									
258	29 Maij	9 Iunij	8	25	27 Nou.	f	25 M	31 M	7
85									
258	14 Maij	25 Maij	9	28	3 Dec.	e	13 A	20 A	42
86									
258	3 Iunij	14 Iunij	10	25	2 Dec.	d	2 A	5 A	0
7									
258	25 Maij	5 Iunij	11	26	30 Nou.	c b	22 M	27 M	7
88									
258	17 Maij	28 Maij	12	27	29 Nou.	A	10 A	16 A	35
89									
259	30 Maij	10 Iunij	13	25	28 Nou.	g	30 M	1 A	7
0									
259	22 Maij	2 Iunij	14	26	27 Nou.	f	18 A	21 A	35
1									
259	10 Iunij	21 Iunij	15	24	2 Dec.	e d	7 A	12 A	7

A . D .	Pente cost	Corpus Chr.	I n d .	Sun.af t.P.	1st Adv.	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
2									
2 5 9 3	2 Iunij	13 Iunij	1	25	1 Dec.	c	27 M	28 M	0
2 5 9 4	18 Maij	29 Maij	2	27	30 Nou.	b	15 A	17 A	3 5
2 5 9 5	7 Iunij	18 Iunij	3	24	29 Nou.	A	4 A	9 A	7
2 5 9 6	29 Maij	9 Iunij	4	25	27 Nou.	g f	24 M	31 M	7
2 5 9 7	14 Maij	25 Maij	5	28	3 Dec.	e	12 A	13 A	3 5
2 5 9 8	3 Iunij	14 Iunij	6	25	2 Dec.	d	1 A	5 A	7
2 5 9 9	26 Maij	6 Iunij	7	26	1 Dec.	c	21 M	28 M	3 5
2 6 0 0	11 Maij	22 Maij	8	28	30 Nou.	b A	9 A	16 A	4 2

A			I						
.			n						
D	Pente		d	Sun.af	1st	Dom.	Luna 14	Easter	Di
.	cost	Corpus Chr.	.	t.P.	Adv.	(old)	(old)	(old)	ff.
2	31	11 Iunij	9	25	29	g	29 M	1 A	7
6	Maij				Nou.				
0									
1									
2	23	3 Iunij	1	26	28	f	17 A	21 A	3
6	Maij		0		Nou.				5
0									
2									
2	12	23 Iunij	1	23	27	e	5 A	6 A	0
6	Iunij		1		Nou.				
0									
3									
2	27	7 Iunij	1	26	2	d c	25 M	28 M	7
6	Maij		2		Dec.				
0									
4									
2	19	30 Maij	1	27	1	b	13 A	17 A	3
6	Maij		3		Dec.				5
0									
5									
2	8	19 Iunij	1	24	30	A	2 A	9 A	7
6	Iunij		4		Nou.				
0									
6									
2	24	4 Iunij	1	26	29	g	22 M	25 M	7
6	Maij		5		Nou.				
0									
7									

At A.D. 2600 the Julian dominical column carries two letters (b A) — the Julian 2600 is a leap year — while the corresponding Gregorian column on folio 414 carries one (e). This is the flagged 2600 divergence: Gregorian-common but Julian-leap.

Folio 416 — new calendar (*Calend. Greg.*), A.D. 2608–2663

Columns as on folio 414.

A. D.	Gol d.	Epa ct	D o m	Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
26 08	6	xxi	c b	23. 0 M	23 M	24 Ian.	10 Febr.	27 M	5 Maij
26 09	7	ii	A	10. 22 A	11 A	12 Febr.	1 Mart.	16 A	25 Maij
26 10	8	xiii	g	31. 7 M	31 M	28 Ian.	14 Febr.	1 A	10 Maij
26 11	9	xxiii i	f	19. 4 A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
26 12	10	v	e d	7. 13 A	8 A	9 Febr.	26 Febr.	12 A	21 Maij
26 13	11	xvi	c	27. 22 M	28 M	31 Ian.	17 Febr.	4 A	13 Maij
26 14	12	xxvi i	b	15. 19 A	16 A	13 Febr.	2 Mart.	17 A	26 Maij
26 15	13	viii	A	5. 4 A	5 A	5 Febr.	22 Febr.	9 A	18 Maij
26 16	14	xix	g f	24. 13 M	25 M	28 Ian.	14 Febr.	31 M	9 Maij
26 17	15	*	e	12. 11 A	13 A	16 Febr.	5 Mart.	20 A	29 Maij
26 18	16	xi	d	1. 19 A	2 A	1 Febr.	18 Febr.	5 A	14 Maij
26 19	17	xxii	c	22. 4 M	22 M	24 Ian.	10 Febr.	28 M	6 Maij
26 20	18	iii	b A	9. 2 A	10 A	13 Febr.	1 Mart.	16 A	25 Maij
26 21	19	xiii	g	29. 11 M	30 M	28 Ian.	14 Febr.	1 A	10 Maij

D o m				Mean full	Luna	Septuagesima	Ash	East	Ascensi
A. D.	Gol d.	Epa ct	.	moon	14	ma	Wed.	er	on
26 22	1	xxvi	f	17. 8 A	17 A	17 Febr.	6 Mart.	21 A	30 Maij
26 23	2	vii	e	6. 17 A	6 A	9 Febr.	26 Febr.	13 A	22 Maij
26 24	3	xxviii	d c	26. 2 M	26 M	25 Ian.	11 Febr.	28 M	6 Maij
26 25	4	xxix	b	13. 23 A	14 A	13 Febr.	2 Mart.	17 A	26 Maij
26 26	5	x	A	3. 8 A	3 A	5 Febr.	22 Febr.	9 A	18 Maij
26 27	6	xxi	g	23. 17 M	23 M	21 Ian.	7 Febr.	25 M	3 Maij
26 28	7	ii	f e	10. 15 A	11 A	10 Febr.	27 Febr.	13 A	22 Maij
26 29	8	xiii	d	30. 23 M	31 M	1 Febr.	18 Febr.	5 A	14 Maij
26 30	9	xxiii i	c	18. 21 A	18 A	21 Febr.	10 Mart.	25 A	3 Iunij
26 31	10	v	b	8. 6 A	8 A	6 Febr.	23 Febr.	10 A	19 Maij
26 32	11	xvi	A g	27. 14 M	28 M	29 Ian.	15 Febr.	1 A	10 Maij
26 33	12	xxvi i	f	15. 12 A	16 A	17 Febr.	6 Mart.	21 A	30 Maij
26 34	13	viii	e	4. 21 A	5 A	2 Febr.	19 Febr.	6 A	15 Maij
26 35	14	xix	d	25. 6 M	25 M	25 Ian.	11 Febr.	29 M	7 Maij
26 36	15	*	c b	12. 3 A	13 A	14 Febr.	2 Mart.	17 A	26 Maij

A. D.	Gol d.	Epa ct	D o m		Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
			.							
26 37	16	xi	A		1. 12 A	2 A	5 Febr.	22 Febr.	9 A	18 Maij
26 38	17	xxii	g		21. 21 M	22 M	21 Ian.	7 Febr.	25 M	3 Maij
26 39	18	iii	f		9. 18 A	10 A	10 Febr.	27 Febr.	14 A	23 Maij
26 40	19	xiii	e d		29. 3 M	30 M	2 Febr.	19 Febr.	5 A	14 Maij
26 41	1	xxvi	c		17. 1 A	17 A	14 Febr.	3 Mart.	18 A	27 Maij
26 42	2	vii	b		6. 10 A	6 A	6 Febr.	23 Febr.	10 A	19 Maij
26 43	3	xviii	A		26. 18 M	26 M	29 Ian.	15 Febr.	2 A	11 Maij
26 44	4	xxix	g f		13. 16 A	14 A	18 Febr.	6 Mart.	21 A	30 Maij
26 45	5	x	e		3. 1 A	3 A	2 Febr.	19 Febr.	6 A	15 Maij
26 46	6	xxi	d		23. 9 M	23 M	25 Ian.	11 Febr.	29 M	7 Maij
26 47	7	ii	c		11. 7 A	11 A	14 Febr.	3 Mart.	18 A	27 Maij
26 48	8	xiii	b A		30. 16 M	31 M	30 Ian.	16 Febr.	2 A	11 Maij
26 49	9	xxiii i	g		18. 13 A	18 A	18 Febr.	7 Mart.	22 A	31 Maij
26 50	10	v	f		7. 22 A	8 A	11 Febr.	28 Febr.	14 A	23 Maij
26 51	11	xvj	e		28. 7 M	28 M	26 Ian.	12 Febr.	30 M	8 Maij

D o									
A. D.	Gol d.	Epa ct	m .	Mean full moon	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
26 52	12	xxvi i	d c	15. 5 A	16 A	15 Febr.	3 Mart.	18 A	27 Maij
26 53	13	viii	b	4. 13 A	5 A	6 Febr.	23 Febr.	10 A	19 Maij
26 54	14	xix	A	24. 22 M	25 M	22 Ian.	8 Febr.	26 M	4 Maij
26 55	15	*	g	12. 20 A	13 A	11 Febr.	28 Febr.	15 A	24 Maij
26 56	16	xi	f e	1. 5 A	2 A	3 Febr.	20 Febr.	6 A	15 Maij
26 57	17	xxii	d	21. 13 M	22 M	25 Ian.	11 Febr.	29 M	7 Maij
26 58	18	iii	c	9. 11 A	10 A	7 Febr.	24 Febr.	11 A	20 Maij
26 59	19	xiiii	b	29. 20 M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
26 60	1	xxvi g	A	16. 17 A	17 A	19 Febr.	7 Mart.	22 A	31 Maij
26 61	2	vii	f	6. 2 A	6 A	3 Febr.	20 Febr.	7 A	16 Maij
26 62	3	xviii	e	26. 11 M	26 M	26 Ian.	12 Febr.	30 M	8 Maij
26 63	4	xxix	d	14. 8 A	14 A	15 Febr.	4 Mart.	19 A	28 Maij

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The great *Table of the Movable Feasts, year by year* (A.D. 1600–5000) continues. Each opening pairs a left-hand **new-calendar (Gregorian)** leaf with a right-hand leaf that completes the Gregorian feast-columns and then gives the corresponding

old-calendar (Julian, *veteris*) reckoning. In the moon and Easter columns the printed month is abbreviated to a single letter: **M** = March (*Martius*), **A** = April (*Aprilis*); in the Advent column **Nou.** = November, **Dec.** = December. Julian (Old-Style) leap years carry **two** dominical letters. The mean-full-moon column is set *day · hour · month*.

Folio 417 — right-hand leaf completing the opening for A.D. 2608–2663

This leaf supplies the remaining feast-columns (Pentecost through the Julian Easter) for the years whose Gregorian half was set on the facing leaf (folio 416). Columns: A.D. | Pentecost | Corpus Christi | Indiction | Sundays after Pentecost | First Sunday of Advent | Dominical letter (Julian) | Moon-14 (Julian) | Easter (Julian) | Diff. (days by which new-calendar Easter differs from old-calendar Easter).

A			I						
.			n						
D	Pente	Corpus	d	Sun.	Adv	Dom.	☾ 14		Di
.	cost	Christi	.	a.P.	ent I	(Jul.)	(Jul.)	Easter (Jul.)	ff.
2 6 0 8	15 Maij	26 Maij	1	27	27 Nou.	f e	10 A	13 A	35
2 6 0 9	4 Iunij	15 Iunij	2	25	3 Dec.	d	30 M	5 A	7
2 6 1 0	20 Maij	31 Maij	3	27	2 Dec.	c	18 A	25 A	42
2 6 1 1	9 Iunij	20 Iunij	4	24	1 Dec.	b	7 A	10 A	7
2 6 1	31 Maij	11 Iunij	5	25	29 Nou.	A g	27 M	1 A	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adv ent I	Dom. (Jul.)	☾ 14 (Jul.)	Easter (Jul.)	Di ff.
2									
2 6 1 3	23 Maij	3 Iunij	6	26	28 Nou.	f	15 A	21 A	35
2 6 1 4	5 Iunij	16 Iunij	7	24	27 Nou.	e	4 A	6 A	7
2 6 1 5	28 Maij	8 Iunij	8	26	3 Dec.	d	24 M	29 M	7
2 6 1 6	19 Maij	30 Maij	9	27	1 Dec.	c b	12 A	17 A	35
2 6 1 7	8 Iunij	19 Iunij	1 0	24	30 Nou.	A	1 A	2 A	0
2 6 1 8	24 Maij	4 Iunij	1 1	26	29 Nou.	g	21 M	25 M	7
2 6 1 9	16 Maij	27 Maij	1 2	27	28 Nou.	f	9 A	14 A	35
2 6 2 0	4 Iunij	15 Iunij	1 3	25	3 Dec.	e d	29 M	5 A	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adv ent I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
2 6 2 1	20 Maii	31 Maij	1 4	27	2 Dec.	c	17 A	18 A	35
2 6 2 2	9 Iunij	20 Iunij	1 5	24	1 Dec.	b	5 A	10 A	7
2 6 2 3	1 Iunij	12 Iunij	1	25	30 Nou.	A	25 M	26 A [recte: 26 M]	0
2 6 2 4	16 Maij	27 Maij	2	27	28 Nou.	g f	13 A	14 A	35
2 6 2 5	5 Iunij	16 Iunij	3	24	27 Nou.	e	2 A	6 A	7
2 6 2 6	28 Maij	8 Iunij	4	26	3 Dec.	d	22 M	29 M	7
2 6 2 7	13 Maij	24 Maij	5	28	2 Dec.	c	10 A	11 A	35
2 6 2 8	1 Iunij	12 Iunij	6	25	30 Nou.	b A	30 M	2 A	7
2	24	4 Iunij	7	26	29	g	18 A	22 A	35

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adv ent I	Dom. (Jul.)	☾ 14 (Jul.)	Easter (Jul.)	Di ff.
6 2 9	Maij				Nou.				
2 6 3 0	13 Iunij	24 Iunij	8	23	28 Nou.	f	7 A	14 A	7
2 6 3 1	29 Maij	9 Iunij	9	25	27 Nou.	e	27 M	30 M	7
2 6 3 2	20 Maij	31 Maij	1 0	27	2 Dec.	d c	15 A	18 A	35
2 6 3 3	9 Iunij	20 Iunij	1 1	24	1 Dec.	b	4 A	10 A	7
2 6 3 4	25 Maij	5 Iunij	1 2	26	30 Nou.	A	24 M	26 M	7
2 6 3 5	17 Maij	28 Maij	1 3	27	29 Nou.	g	12 A	15 A	35
2 6 3 6	5 Iunij	16 Iunij	1 4	24	27 Nou.	f e	1 A	6 A	7
2 6	28 Maij	8 Iunij	1 5	26	3 Dec.	d	21 M	22 M	0

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adv ent I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
3 7									
2 6 3 8	13 Maij	24 Maij	1	28	2 Dec.	c	9 A	11 A	35
2 6 3 9	2 Iunij	13 Iunij	2	25	1 Dec.	b	29 M	3 A	7
2 6 4 0	24 Maij	4 Iunij	3	26	29 Nou.	A g	17 A	22 A	35
2 6 4 1	6 Iunij	17 Iunij	4	24	28 Nou.	f	5 A	7 A	7
2 6 4 2	29 Maij	9 Iunij	5	25	27 Nou.	e	25 M	30 M	7
2 6 4 3	21 Maij	1 Iunij	6	27	3 Dec.	d	13 A	19 A	35
2 6 4 4	9 Iunij	20 Iunij	7	24	1 Dec.	c b	2 A	3 A	0
2 6 4	25 Maij	5 Iunij	8	26	30 Nou.	A	22 M	29 M	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adv ent I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
5									
2 6 4 6	17 Maij	28 Maij	9	27	29 Nou.	g	10 A	15 A	35
2 6 4 7	6 Iunij	17 Iunij	1 0	24	28 Nou.	f	30 M	31 M	0
2 6 4 8	21 Maij	1 Iunij	1 1	27	3 Dec.	e d	18 A	19 A	35
2 6 4 9	10 Iunij	21 Iunij	1 2	24	2 Dec.	c	7 A	11 A	7
2 6 5 0	2 Iunij	13 Iunij	1 3	25	1 Dec.	b	27 M	3 A	7
2 6 5 1	18 Maij	29 Maij	1 4	27	30 Nou.	A	15 A	16 A	35
2 6 5 2	6 Iunij	17 Iunij	1 5	24	28 Nou.	g f	4 A	7 A	7
2 6 5 3	29 Maij	9 Iunij	1	25	27 Nou.	e	24 M	30 M	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adv ent I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
2 6 5 4	14 Maij	25 Maij	2	28	3 Dec.	d	12 A	19 M [recte: 19 A]	42
2 6 5 5	3 Iunij	14 Iunij	3	25	2 Dec.	c	1 A	4 A	7
2 6 5 6	25 Maij	5 Iunij	4	26	30 Nou.	b A	21 M	26 M	7
2 6 5 7	17 Maij	28 Maij	5	27	29 Nou.	g	9 A	15 A	35
2 6 5 8	30 Maij	10 Iunij	6	25	28 Nou.	f	29 M	31 M	7
2 6 5 9	22 Maij	2 Iunij	7	26	27 Nou.	e	17 A	20 A	35
2 6 6 0	10 Iunij	21 Iunij	8	24	2 Dec.	d c	5 A	11 A	7
2 6 6 1	26 Maij	6 Iunij	9	26	1 Dec.	b	25 M	27 M	7
2	18	29 Maij	1	27	30	A	13 A	16 A	35

A	D	Pente cost	Corpus Christi	I n d . .	Sun. a.P.	Adv ent I	Dom. (Jul.)	☾ 14 (Jul.)	Easter (Jul.)	Di ff.
6 6 2	Maij			0		Nou.				
2 6 6 3	7 Iunij	18 Iunij		1 1	24	29 Nou.	g	2 A	8 A	7

Columns: A.D. | Golden Number | Epact | Dominical letter (Gregorian) | Mean full moon (day · hour · month) | Moon-14 (Gregorian) | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter (new calendar) | Ascension. Epact 30 is printed as the asterisk * (the new-Calendar form).

A									
. D .	G ol d.	Ep ac t	Dom. (Greg.)	Mean full moon (D·H·mo)	☾ 14 (Greg.)	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
2 6 7 6	1 7	xx ij	b A	21 · 6 · M	22 M	23 Ian.	9 Feb.	26 M	4 Maij
2 6 7 7	1 8	iiij	g	9 · 3 · A	10 A	11 Feb.	28 Feb.	15 A	24 Maij
2 6 7 8	1 9	xii ij	f	29 · 12 · M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
2 6 7 9	1	xx vi	e	17 · 10 · A	17 A	16 Feb.	5 Mar .	20 A	29 Maij
2 6 8 0	2	vij	d c	5 · 19 · A	6 A	8 Feb.	25 Feb.	11 A	20 Maij
2 6 8 1	3	xv iiij	b	26 · 3 · M	26 M	23 Ian.	9 Feb.	27 M	5 Maij
2 6 8 2	4	xx ix	A	14 · 1 · A	14 A	12 Feb.	1 Mar .	16 A	25 Maij
2 6 8 3	5	x	g	3 · 10 · A	3 A	4 Feb.	21 Feb.	8 A	17 Maij
2 6	6	xx	f e	22 · 19 · M	23 M	27 Ian.	13	30 M	8

A	.	G	Ep							
D	ol	ac	Dom.	Mean full moon	☾ 14	Septua	Ash	Easter	Asce	
.	d.	t	(Greg.)	(D·H·mo)	(Greg.)	gesima	We	(new)	nsio	n
6		j					Feb.		Maij	
8										
4										
2	7	ij	d	10 · 16 · A	11 A	8 Feb.	25	12 A	21	
6							Feb.		Maij	
8										
5										
2	8	xii	c	31 · 1 · M	31 M	31 Ian.	17	4 A	13	
6		j					Feb.		Maij	
8										
6										
2	9	xx	b	18 · 22 · A	18 A	20 Feb.	9	24 A	2	
6		iiij					Mar		Iunij	
8							.			
7										
2	1	v	A g	7 · 7 · A	8 A	12 Feb.	29	15 A	24	
6	0						Feb.		Maij	
8										
8										
2	1	xv	f	27 · 16 · M	28 M	27 Ian.	13	31 M	9	
6	1	j					Feb.		Maij	
8										
9										
2	1	xx	e	15 · 14 · A	16 A	16 Feb.	5	20 A	29	
6	2	vij					Mar		Maij	
9							.			
0										
2	1	vii	d	4 · 22 · A	5 A	8 Feb.	25	12 A	21	
6	3	i					Feb.		Maij	
9										
1										
2	1	xi	c b	24 · 7 · M	25 M	24 Ian.	10	27 M	5	
6	4	x					Feb.		Maij	

A D .	G ol d.	Ep ac t	Dom. (Greg.)	Mean full moon (D·H·mo)	☾ 14 (Greg.)	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
0									
2 7 0 1	4	xx ix	f	14 · 17 · A	14 A	17 Feb.	6 Mar .	21 A	30 Maij
2 7 0 2	5	x	e	4 · 2 · A	3 A	2 Feb.	19 Feb.	6 A	15 Maij
2 7 0 3	6	xx i	d	24 · 11 · M	23 M	25 Ian.	11 Feb.	29 M	7 Maii
2 7 0 4	7	ij	c b	11 · 9 · A	11 A	14 Feb.	2 Mar .	17 A	26 Maij
2 7 0 5	8	xii j	A	31 · 17 · M	31 M	29 Ian.	15 Feb.	2 A	11 Maij
2 7 0 6	9	xx iiij	g	19 · 15 · A	18 A	18 Feb.	7 Mar .	22 A	31 Maij
2 7 0 7	1 0	v	f	9 · 0 · A	8 A	10 Feb.	27 Feb.	14 A	23 Maij
2 7 0 8	1 1	xv j	e d	28 · 9 · M	28 M	26 Ian.	12 Feb.	29 M	7 Maij

A	.	G	Ep							
D	ol	ac	Dom.	Mean full moon	☾ 14	Septua	Ash	Easter	Asce	
.	d.	t	(Greg.)	(D·H·mo)	(Greg.)	gesima	We	(new)	nsio	n
2	1	xx	c	16 · 6 · A	16 A	14 Feb.	3	18 A	27	
7	2	vij					Mar		Maij	
0							.			
9										
2	1	vii	b	5 · 15 · A	5 A	6 Feb.	23	10 A	19	
7	3	i					Feb.		Maij	
1										
0										
2	1	xi	A	26 · 0 · M	25 M	22 Ian.	8	26 M	4	
7	4	x					Feb.		Maij	
1										
1										
2	1	*	g f	12 · 21 · A	13 A	11 Feb.	28	14 A	23	
7	5						Feb.		Maij	
1										
2										
2	1	xi	e	2 · 6 · A	2 A	2 Feb.	19	6 A	15	
7	6						Feb.		Maij	
1										
3										
2	1	xx	d	22 · 15 · M	22 M	25 Ian.	11	29 M	7	
7	7	ii					Feb.		Maij	
1										
4										
2	1	iiij	c	10 · 13 · A	10 A	7 Feb.	24	11 A	20	
7	8						Feb.		Maij	
1										
5										
2	1	xii	b A	29 · 21 · M	30 M	30 Ian.	16	2 A	11	
7	9	ij					Feb.		Maij	
1										
6										
2	1	xx	g	17 · 19 · A	17 A	18 Feb.	7	22 A	31	

A	G	Ep	Dom.	Mean full moon	☾ 14	Septua	Ash	Easter	Asce
D	ol	ac	(Greg.)	(D·H·mo)	(Greg.)	gesima	We	(new)	nsio
.	d.	t					d.		n
7		vj					Mar		Maij
1							.		
7									
2	2	vii	f	7 · 4 · A	6 A	3 Feb.	20	7 A	16
7							Feb.		Maij
1									
8									
2	3	xv	e	27 · 12 · M	26 M	26 Ian.	12	30 M	8
7		iiij					Feb.		Maij
1									
9									

Folio 419 — right-hand leaf, A.D. 2664–2719 (Julian feast-columns and *veteris* reckoning)

Columns as on folio 417: A.D. | Pentecost | Corpus Christi | Indiction | Sundays
after Pentecost | First Sunday of Advent | Dominical letter (Julian) | Moon-14
(Julian) | Easter (Julian) | Diff.

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
2 6 6 4	29 Maij	9 Iunij	1 2	25	27 Nou.	f e	22 M	23 M	0
2 6 6 5	14 Maij	25 Maij	1 3	28	3 Dec.	d	10 A	12 A	35
2 6 6	3 Iunij	14 Iunij	1 4	25	2 Dec.	c	30 M	4 A	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
6									
2 6 6 7	26 Maij	6 Iunij	1 5	26	1 Dec.	b	18 A	24 A	35
2 6 6 8	7 Iunij	18 Iunij	1	24	29 Nou.	A g	7 A	8 A	7
2 6 6 9	30 Maij	10 Iunij	2	25	28 Nou.	f	27 M	31 M	7
2 6 7 0	22 Maij	2 Iunij	3	26	27 Nou.	e	15 A	20 A	35
2 6 7 1	11 Iunij	22 Iunij	4	24	3 Dec.	d	4 A	5 A	0
2 6 7 2	26 Maij	6 Iunij	5	26	1 Dec.	c b	24 M	27 M	7
2 6 7 3	18 Maij	29 Maij	6	27	30 Nou.	A	12 A	16 A	35
2 6 7 4	7 Iunij	18 Iunij	7	24	29 Nou.	g	1 A	8 A	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
2 6 7 5	23 Maij	3 Iunij	8	26	28 Nou.	f	21 M	24 M	7
2 6 7 6	14 Maij	25 Maij	9	28	3 Dec.	e d	9 A	12 A	35
2 6 7 7	3 Iunij	14 Iunij	1 0	25	2 Dec.	c	29 M	4 A	7
2 6 7 8	19 Maij	30 Maij	1 1	27	1 Dec.	b	17 A	24 A	42
2 6 7 9	8 Iunij	19 Iunij	1 2	24	30 Nou.	A	5 A	9 A	7
2 6 8 0	30 Maij	10 Iunij	1 3	25	28 Nou.	g f	25 M	31 M	7
2 6 8 1	15 Maij	26 Maij	1 4	27	27 Nou.	e	13 A	20 A	42
2 6 8 2	4 Iunij	15 Iunij	1 5	25	3 Dec.	d	2 A	5 A	7
2	27	7 Iunij	1	26	2	c	22 M	28 M	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
6 8 3	Maij				Dec.				
2 6 8 4	18 Maij	29 Maij	2	27	30 Nou.	b A	10 A	16 A	35
2 6 8 5	31 Maij	11 Iunij	3	25	29 Nou.	g	30 M	1 A	7
2 6 8 6	23 Maij	3 Iunij	4	26	28 Nou.	f	18 A	21 A	35
2 6 8 7	12 Iunij	23 Iunij	5	23	27 Nou.	e	7 A	13 A	7
2 6 8 8	3 Iunij	14 Iunij	6	25	2 Dec.	d c	27 M	28 M	0
2 6 8 9	19 Maij	30 Maij	7	27	1 Dec.	b	15 A	17 A	35
2 6 9 0	8 Iunij	19 Iunij	8	24	30 Nou.	A	4 A	9 A	7
2 6	31 Maij	11 Iunij	9	25	29 Nou.	g	24 M	25 M	0

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
9 1									
2 6 9 2	15 Maij	26 Maij	1 0	27	27 Nou.	f e	12 A	13 A	35
2 6 9 3	4 Iunij	15 Iunij	1 1	25	3 Dec.	d	1 A	5 A	7
2 6 9 4	27 Maij	7 Iunij	1 2	26	2 Dec.	c	21 M	28 M	7
2 6 9 5	12 Maij	23 Maij	1 3	28	1 Dec.	b	9 A	10 A	35
2 6 9 6	31 Maij	11 Iunij	1 4	25	29 Nou.	A g	29 M	1 A	7
2 6 9 7	23 Maij	3 Iunij	1 5	26	28 Nou.	f	17 A	21 A	35
2 6 9 8	12 Iunij	23 Iunij	1	23	27 Nou.	e	5 A	6 A	0
2 6 9	28 Maij	8 Iunij	2	26	3 Dec.	d	25 M	29 M	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
9									
2 7 0 0	20 Maij	31 Maij	3	27	2 Dec.	c b	13 A	17 A	35
2 7 0 1	9 Iunij	20 Iunij	4	24	1 Dec.	A	2 A	9 A	7
2 7 0 2	25 Maij	5 Iunij	5	26	30 Nou.	g	22 M	25 M	7
2 7 0 3	17 Maij	28 Maij	6	27	29 Nou.	f	10 A	14 A	35
2 7 0 4	5 Iunij	16 Iunij	7	24	27 Nou.	e d	30 M	5 A	7
2 7 0 5	21 Maij	1 Iunij	8	27	3 Dec.	c	18 A	25 A	42
2 7 0 6	10 Iunij	21 Iunij	9	24	2 Dec.	b	7 A	10 A	7
2 7 0 7	2 Iunij	13 Iunij	1 0	25	1 Dec.	A	27 M	2 A	7

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	14 (Jul.)	Easter (Jul.)	Di ff.
2 7 0 8	17 Maij	28 Maij	1 1	27	29 Nou.	g f	15 A	21 A	42
2 7 0 9	6 Iunij	17 Iunij	1 2	24	28 Nou.	e	4 A	6 A	7
2 7 1 0	29 Maij	9 Iunij	1 3	25	27 Nou.	d	24 M	29 M	7
2 7 1 1	14 Maij	25 Maij	1 4	28	3 Dec.	c	12 A	18 A	42
2 7 1 2	2 Iunij	13 Iunij	1 5	25	1 Dec.	b A	1 A	2 A	7
2 7 1 3	25 Maij	5 Iunij	1	26	30 Nou.	g	21 M	25 M	7
2 7 1 4	17 Maij	28 Maij	2	27	29 Nou.	f	9 A	14 A	35
2 7 1 5	30 Maij	10 Iunij	3	25	28 Nou.	e	29 M	30 M	7
2	21	1 Iunij	4	27	30	d c	17 A	18 A	35

A . D .	Pente cost	Corpus Christi	I n d .	Sun. a.P.	Adve nt I	Dom. (Jul.)	☾ 14 (Jul.)	Easter (Jul.)	Di ff.
7 1 6	Maij				Nou.				
2 7 1 7	10 Iunij	21 Iunij	5	24	3 Dec.	b	5 A	10 A	7
2 7 1 8	26 Maij	6 Iunij	6	26	2 Dec.	A	25 M	26 M	7
2 7 1 9	18 Maij	29 Maij	7	27	1 Dec.	g	13 A	15 A	35

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

Christoph Clavius, Explicatio Romani Calendarii, Caput XXII: the perpetual table of movable feasts (A.D. 1600–5000), continued. Each opening pairs a new-calendar (Gregorian) leaf with an old-calendar (veteris = Julian) leaf covering the same span of years. These three leaves carry the years 2720–2831.

Column conventions (verbatim headings glossed). In the moon columns the single letter after a date is the month: **A** = *Aprilis* (April), **M** = *Martius* (March). The mean-full-moon column is set *Day · Hour · month* (D·H·mens.). Julian (old-calendar) leap years carry two Dominical letters; from 2800 onward the Gregorian leaf too shows two letters in its leap years, since **2800 is a Gregorian leap year** (divisible by 400 — both calendars intercalate, so the two reckonings do not diverge here). The *Diff.* column gives the number of days by which new-calendar Easter differs from old-calendar Easter (the accumulated calendar offset in this era is 19 days).

Folio 420 — new calendar (Gregorian)

Headings glossed: *Anni Domini* (Years of the Lord) · *Aur. Num.* (Golden Number) · *Epactæ* (Epacts) · *Lit. Dnicales Calend. Greg.* (Dominical letters, Gregorian) · *Plenilunia media Cal. Gregor.* — *D. H.* (mean full moons, Gregorian — day, hour) · *Lunæ xiiij Calendarij Gregoriani* (the 14th of the [paschal] moon, Gregorian) · *Septuagesima* · *Dies Cinerum* (Ash Wednesday) · *Pascha Calend. noui* (Easter, new calendar) · *Ascensio Domini* (Ascension).

Anni Domini	Aur. Num.	Epactæ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiij	Septuagesima	Dies Cinerum	Pascha	Ascensio
2720	4	xxix	d c	14·10·A	14 A	15 Feb.	3 Mar.	18 A	27 Maij
2721	5	x	b	3·19·A	3 A	6 Feb.	23 Feb.	10 A	19 Maij
2722	6	xxj	A	24·4·M	23 M	22 Ian.	8 Feb.	26 A	4 Maij
2723	7	ij	g	12·1·A	11 A	11 Feb.	28 Feb.	15 A	24 Maij
2724	8	xiiij	f e	31·10·M	31 M	3 Feb.	20 Feb.	6 A	15 Maij
2725	9	xxiiij	d	19·8·A	18 A	15 Feb.	4 Mar.	19 A	28 Maij
2726	10	v	c	8·16·A	8 A	7 Feb.	24 Feb.	11 A	20 Maij
2727	11	xvj	b	29·1·M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
2728	12	xx	A g	15·23·A	16 A	19	7 Mar.	22	31

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
		vij				Feb.		A	Ma ij
2729	13	vii i	f	5·8·A	5 A	3 Feb.	20 Feb.	7 A	16 Ma ij
2730	14	xi x	e	25·16·M	25 M	26 Ian.	12 Feb.	30 M	8 Ma ij
2731	15	*	d	13·14·A	13 A	15 Feb.	4 Mar.	19 A	28 Ma ij
2732	16	xj	c b	1·23·A	2 A	31 Ian.	17 Feb.	3 A	12 Ma ij
2733	17	xx ij	A	22·8·M	22 M	22 Ian.	8 Feb.	26 M	4 Ma ij
2734	18	iiij	g	10·5·A	10 A	11 Feb.	28 Feb.	15 A	24 Ma ij
2735	19	xii ij	f	30·14·M	30 M	27 Ian.	13 Feb.	31 M	9 Ma ij
2736	1	xx vi	e d	17·11·A	17 A	16 Feb.	4 Mar.	19 A	28 Ma ij
2737	2	vij	c	6·20·A	6 A	7 Feb.	24 Feb.	11 A	20 Ma ij
2738	3	xv iiij	b	27·5·M	26 M	23 Ian.	9 Feb.	27 M	5 Ma ij

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
2739	4	xx ix	A	15·3·A	14 A	12 Feb.	1 Mar.	16 A	25 Ma ij
2740	5	x	g f	3·11·A	3 A	4 Feb.	21 Feb.	7 A	16 Ma ij
2741	6	xxj	e	23·20·M	23 M	26 Ian.	12 Feb.	30 M	8 Ma ij
2742	7	ij	d	11·18·A	11 A	8 Feb.	25 Feb.	12 A	21 Ma ij
2743	8	xii j	c	1·3·A	31 M	31 Ian.	17 Feb.	4 A	13 Ma ij
2744	9	xx iiiij	b A	19·0·A	18 A	20 Feb.	8 Mar.	23 A	1 Iun ij
2745	10	v	g	8·9·A	8 A	11 Feb.	28 Feb.	15 A	24 Ma ij
2746	11	xvj	f	28·18·M	28 M	27 Ian.	13 Feb.	31 M	9 Ma ij
2747	12	xx vij	e	16·15·A	16 A	16 Feb.	5 Mar.	20 A	29 Ma ij
2748	13	vii i	d c	5·0·A	5 A	8 Feb.	25 Feb.	11 A	20 Ma ij
2749	14	xi x	b	25·9·M	25 M	23 Ian.	9 Feb.	27 M	5 Ma

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
									ij
2750	15	*	A	13·6·A	13 A	12 Feb.	1 Mar.	16 A	25 Ma ij
2751	16	xj	g	2·15·A	2 A	4 Feb.	21 Feb.	8 A	17 Ma ij
2752	17	xx ij	f e	22·0·M	22 M	20 Ian.	6 Feb.	23 M	1 Ma ij
2753	18	iiij	d	9·22·A	10 A	8 Feb.	25 Feb.	12 A	21 Ma ij
2754	19	xii ij	c	30·6·M	30 M	31 Ian.	17 Feb.	4 A	13 Ma ij
2755	1	xx vi	b	18·4·A	17 A	20 Feb.	9 Mar.	24 A	2 Iun ij
2756	2	vij	A g	6·13·A	6 A	5 Feb.	22 Feb.	8 A	17 Ma ij
2757	3	xv iiij	f	26·22·M	26 M	27 Ian.	13 Feb.	31 M	9 Ma ij
2758	4	xx ix	e	14·19·A	14 A	16 Feb.	5 Mar.	20 A	29 Ma ij
2759	5	x	d	4·4·A	3 A	1 Feb.	18 Feb.	5 A	14 Ma ij
2760	6	xxj	c b	23·13·M	23 M	24	10	27	5

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
						Ian.	Feb.	M	Ma ij
2761	7	ij	A	11·10·A	11 A	12 Feb.	1 Mar.	16 A	25 Ma ij
2762	8	xii j	g	31·19·M	31 M	28 Ian.	14 Feb.	1 A	10 Ma ij
2763	9	xx iiiij	f	19·17·A	18 A	17 Feb.	6 Mar.	21 A	30 Ma ij
2764	10	v	e d	8·1·A	8 A	9 Feb.	26 Feb.	12 A	21 Ma ij
2765	11	xvj	c	28·10·M	28 M	31 Ian.	17 Feb.	4 A	13 Ma ij
2766	12	xx vij	b	16·8·A	16 A	13 Feb.	2 Mar.	17 A	26 Ma ij
2767	13	vii i	A	5·17·A	5 A	5 Feb.	22 Feb.	9 A	18 Ma ij
2768	14	xi x	g f	25·1·M	25 M	28 Ian.	14 Feb.	31 M	9 Ma ij
2769	15	*	e	12·23·A	13 A	16 Feb.	5 Mart.	20 A	29 Ma ij
2770	16	xi	d	2·8·A	2 A	1 Feb.	18 Feb.	5 A	14 Ma ij

Anni Domini	Aur. Num.	Epactæ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiij	Septuagesima	Dies Cinerum	Pascha	Ascensio
2771	17	xxii	c	22·17·M	22 M	24 Ian.	10 Feb.	28 M	6 Maij
2772	18	iiij	b A	9·14·A	10 A	13 Feb.	1 Mar.	16 A	25 Maij
2773	19	xiiij	g	27·23·M	30 M	28 Ian.	14 Feb.	1 A	10 Maij
2774	1	xxvj	f	17·20·A	17 A	17 Feb.	6 Mar.	21 A	30 Maij
2775	2	vij	e	7·5·A	6 A	9 Feb.	26 Feb.	13 A	22 Maij

Folio 421 — old calendar (*veteris* = Julian), same years 2720–2775

Headings glossed: *Anni Domini* · *Pentecoste* (Pentecost) · *Corpus Domini* (Corpus Christi) · *Indictio* (Indiction) · *Dnicæ post Pentecosten* (Sundays after Pentecost) · *Dominica prima Aduentus* (First Sunday of Advent) · *Literæ Dnicales Calendarij veteris* (Dominical letters, old calendar) · *Lunæ xiiij Calendarij veteris* (the 14th of the moon, old calendar) · *Pascha Calendarij veteris* (Easter, old calendar) · *Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt* (days by which new-calendar Easter differs from old-calendar Easter). The Advent and Corpus dates continue in the abbreviated *Nou.* (November) / *Dec.* / *Maij* / *Iunij* forms as printed.

Anni Domini	Pentecos- te	Corpus Domin- i	Indicti- o	Dnic. post Pent.	Dom. I Aduent us	Lit. Dnic. vet.	Luna xiiij vet.	Pasc- ha vet.	D i ff f.
2720	6 Iunij	17 Iunij	8	24	28 Nou.	f e	2 A	6 A	7

Anni Domi ni	Pent ecos te	Corpu s Domin i	Ind icti o	Dnic. post Pent.	Dom. I Aduent us	Lit. Dnic. vet.	Luna xiiij vet.	Pasc ha vet.	D i ff f.
2721	29 Maij	9 Iunij	9	25	27 Nou.	d	22 M	29 M	7
2722	14 Maij	25 Maij	10	28	3 Dec.	c	10 A	11 A	3 5
2723	3 Iunij	14 Iunij	11	25	2 Dec.	b	30 M	3 A	7
2724	25 Maij	5 Iunij	12	26	30 Nou.	A g	18 A	22 A	3 5
2725	7 Iunij	18 Iunij	13	24	29 Nou.	f	7 A	14 A	1 4
2726	30 Maij	10 Iunij	14	25	28 Nou.	e	27 M	30 M	7
2727	22 Maij	2 Iunij	15	26	27 Nou.	d	15 A	19 A	3 5
2728	10 Iunij	21 Iunij	1	24	2 Dec.	c b	4 A	10 A	7
2729	26 Maij	6 Iunij	2	26	1 Dec.	A	24 M	26 M	7
2730	18 Maij	29 Maij	3	27	30 Nou.	g	12 A	15 A	3 5
2731	7 Iunij	18 Iunij	4	24	29 Nou.	f	1 A	7 A	7
2732	22 Maij	2 Iunij	5	26	27 Nou.	e d	21 M	22 M	7
2733	14 Maij	25 Maij	6	28	3 Dec.	c	9 A	11 A	3 5
2734	3 Iunij	14 Iunij	7	25	2 Dec.	b	29 M	3 A	7
2735	19 Maii	30 Maij	8	27	1 Dec.	A	17 A	23 A	4 2
2736	7	18	9	24	29 Nou.	g f	5 A	7 A	7

Anni Domi ni	Pent ecos te	Corpu s Domin i	Ind icti o	Dnic. post Pent.	Dom. I Aduent us	Lit. Dnic. vet.	Luna xiiij vet.	Pasc ha vet.	D i ff f.
	Iunij	Iunij							
2737	30 Maij	10 Iunij	10	25	28 Nou.	e	25 M	30 M	7
2738	15 Maij	26 Maij	11	27	27 Nou.	d	13 A	19 A	4 2
2739	4 Iunij	15 Iunij	12	25	3 Dec.	c	2 A	4 A	7
2740	26 Maij	6 Iunij	13	26	1 Dec.	b A	22 M	26 M	7
2741	18 Maij	29 Maij	14	27	30 Nou.	g	10 A	15 A	3 5
2742	31 Maij	11 Iunij	15	25	29 Nou.	f	30 M	31 M	7
2743	23 Maij	3 Iunij	1	26	28 Nou.	e	18 A	20 A	3 5
2744	11 Iunij	22 Iunij	2	24	3 Dec.	d c	7 A	11 A	7
2745	3 Iunij	14 Iunij	3	25	2 Dec.	b	27 M	3 A	7
2746	19 Maij	30 Maij	4	27	1 Dec.	A	15 A	16 A	3 5
2747	8 Iunij	19 Iunij	5	24	30 Nou.	g	4 A	8 A	7
2748	30 Maij	10 Iunij	6	25	28 Nou.	f e	24 M	30 M	7
2749	15 Maij	26 Maij	7	27	27 Nou.	d	12 A	19 A	4 2
2750	4 Iunij	15 Iunij	8	25	3 Dec.	c	1 A	4 A	7
2751	27 Maij	7 Iunij	9	26	2 Dec.	b	21 M	27 M	7

Anni Domi ni	Pent ecos te	Corpu s Domin i	Ind icti o	Dnic. post Pent.	Dom. I Aduent us	Lit. Dnic. vet.	Luna xiiij vet.	Pasc ha vet.	D i ff f.
2752	11 Maij	22 Maij	10	28	30 Nou.	A g	9 A	15 A	4 2
2753	31 Maij	11 Iunij	11	25	29 Nou.	f	29 M	31 M	7
2754	23 Maij	3 Iunij	12	26	28 Nou.	e	17 A	20 A	3 5
2755	12 Iunij	23 Iunij	13	23	27 Nou.	d	5 A	12 A	7
2756	27 Maij	7 Iunij	14	26	2 Dec.	c b	25 M	27 M	7
2757	19 Maij	30 Maij	15	27	1 Dec.	A	13 A	16 A	3 5
2758	8 Iunij	19 Iunij	1	24	30 Nou.	g	2 A	8 A	7
2759	24 Maij	4 Iunij	2	26	29 Nou.	f	22 M	24 M	7
2760	15 Maij	26 Maij	3	27	27 Nou.	e d	10 A	12 A	3 5
2761	4 Iunij	15 Iunij	4	25	3 Dec.	c	30 M	4 A	7
2762	20 Maij	31 Maij	5	27	2 Dec.	b	18 A	24 A	4 2
2763	9 Iunij	20 Iunij	6	24	1 Dec.	A	7 A	9 A	7
2764	31 Maij	11 Iunij	7	25	29 Nou.	g f	27 M	31 M	7
2765	23 Maij	3 Iunij	8	26	28 Nou.	e	15 M [recte: 15 A]	20 A	3 5
2766	5 Iunij	16 Iunij	9	24	27 Nou.	d	4 A	5 A	7
2767	28	8 Iunij	10	26	3 Dec.	c	24 M	28 M	7

Anni Domi ni	Pent ecos te	Corpu s Domin i	Ind icti o	Dnic. post Pent.	Dom. I Aduent us	Lit. Dnic. vet.	Luna xiiij vet.	Pasc ha vet.	D i ff f.
	Maij								
2768	19 Maij	30 Maij	11	27	1 Dec.	b A	12 A	16 A	3 5
2769	8 Iunij	19 Iunij	12	24	30 Nou.	g	1 A	8 A	7
2770	24 Maij	4 Iunij	13	26	29 Nou.	f	21 M	24 M	7
2771	16 Maij	27 Maij	14	27	28 Nou.	e	9 A	13 A	3 5
2772	4 Iunij	15 Iunij	15	25	3 Dec.	d c	29 M	4 A	7
2773	20 Maij	31 Maij	1	27	2 Dec.	b	17 A	24 A	4 2
2774	9 Iunij	20 Iunij	2	24	1 Dec.	A	5 A	9 A	7
2775	1 Iunij	12 Iunij	3	25	30 Nou.	g	25 M	1 A	7

Folio 422 — new calendar (Gregorian), years 2776–2831

Headings as on folio 420.

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
2776	3	xv ijj	d c	26·14·M	26 M	25 Ian.	11 Feb.	28 M	6 Ma ij
2777	4	xx ix	b	14·12·A	14 A	13 Feb.	2 Mar.	17 A	26 Ma ij
2778	5	x	A	3·20·A	3 A	5 Feb.	22	9	18

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
							Feb.	A	Ma ij
2779	6	xxj	g	24·5·M	23 M	21 Ian.	7 Feb.	25 M	3 Ma ij
2780	7	ij	f e	11·3·A	11 A	10 Feb.	27 Feb.	13 A	22 Ma ij
2781	8	xii j	d	31·12·M	31 M	1 Feb.	18 Feb.	5 A	14 Ma ij
2782	9	xx iiii	c	19·9·A	18 A	21 Feb.	10 Mar.	25 A	3 Iun ij
2783	10	v	b	8·18·A	8 A	6 Feb.	23 Feb.	10 A	19 Ma ij
2784	11	xvj	A g	28·3·M	28 M	29 Ian.	15 Feb.	1 A	10 Ma ij
2785	12	xx vij	f	16·0·A	16 A	17 Feb.	6 Mar.	21 A	30 Ma ij
2786	13	vii i	e	5·9·A	5 A	2 Feb.	19 Feb.	6 A	15 Ma ij
2787	14	xi x	d	25·18·M	25 M	25 Ian.	11 Feb.	29 M	7 Ma ij
2788	15	*	c b	12·16·A	13 A	14 Feb.	2 Mar.	17 A	26 Ma ij

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
2789	16	xj	A	2·0·A	2 A	5 Feb.	22 Feb.	9 A	18 Ma ij
2790	17	xx ij	g	22·9·M	22 M	21 Ian.	7 Feb.	25 M	3 Ma ij
2791	18	iii	f	10·7·A	10 A	10 Feb.	27 Feb.	14 A	23 Ma ij
2792	19	xii ij	e d	29·15·M	30 M	2 Feb.	19 Feb.	5 A	14 Ma ij
2793	1	xx vi	c	17·13·A	17 A	14 Feb.	3 Mar.	18 A	27 Ma ij
2794	2	vij	b	6·22·A	6 A	6 Feb.	23 Feb.	10 A	19 Ma ij
2795	3	xv ij	A	27·7·M	26 M	29 Ian.	15 Feb.	2 A	11 Ma ij
2796	4	xx ix	g f	14·4·A	14 A	17 Feb.	6 Mar.	21 A	30 Ma ij
2797	5	x	e	3·13·A	3 A	2 Feb.	19 Feb.	6 A	15 Ma ij
2798	6	xxj	d	23·22·M	23 M	25 Ian.	11 Feb.	29 M	7 Ma ij
2799	7	ij	c	11·19·A	11 A	14 Feb.	3 Mar.	18 A	27 Ma

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
									ij
2800	8	xii j	b A	31·4·M	31 M	30 Ian.	16 Feb.	2 A	11 Ma ij
2801	9	xx iiii	g	19·2·A	18 A	18 Feb.	7 Mar.	22 A	31 Ma ij
2802	10	v	f	8·11·A	8 A	10 Feb.	27 Feb.	14 A	23 Ma ij
2803	11	xvj	e	28·19·M	28 M	26 Ian.	12 Feb.	30 M	8 Ma ij
2804	12	xx vij	d c	15·17·A	16 A	15 Feb.	3 Mar.	18 A	27 Ma ij
2805	13	vii i	b	5·2·A	5 A	6 Feb.	23 Feb.	10 A	19 Ma ij
2806	14	xi x	A	25·10·M	25 M	22 Ian.	8 Feb.	26 M	4 Ma ij
2807	15	*	g	13·8·A	13 A	11 Feb.	28 Feb.	15 A	24 Ma ij
2808	16	xj	f e	1·17·A	2 A	3 Feb.	20 Feb.	6 A	15 Ma ij
2809	17	xx ij	d	22·2·M	22 M	25 Ian.	11 Feb.	29 M	7 Ma ij
2810	18	iiij	c	9·23·A	10 A	7 Feb.	24	11	20

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
							Feb.	A	Ma ij
2811	19	xii ii	b	30·8·M	30 M	30 Ian.	16 Feb.	3 A	12 Ma ij
2812	1	xx vj	A g	17·6·A	17 A	19 Feb.	7 Mar.	22 A	31 Ma ij
2813	2	vii	f	6·14·A	6 A	3 Feb.	20 Feb.	7 A	16 Ma ij
2814	3	xv ij	e	26·23·M	26 M	26 Ian.	12 Feb.	30 M	8 Ma ij
2815	4	xx ix	d	14·21·A	14 A	15 Feb.	4 Mar.	19 A	28 Ma ij
2816	5	x	c b	3·6·A	3 A	7 Feb.	24 Feb.	10 A	19 Ma ij
2817	6	xx i	A	23·14·M	23 M	22 Ian.	8 Feb.	26 M	4 Ma ij
2818	7	ij	g	11·12·A	11 A	11 Feb.	28 Feb.	15 A	24 Ma ij
2819	8	xii j	f	31·21·M	31 M	3 Feb.	20 Feb.	7 A	16 Ma ij
2820	9	xx iiii	e d	18·18·A	18 A	16 Feb.	4 Mar.	19 A	28 Ma ij

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dnic. Greg.	Plenilunium (D·H·mens.)	Luna xiiiij	Septu agesi ma	Dies Ciner um	P as ch a	Asc ens io
2821	10	v	c	8·3·A	8 A	7 Feb.	24 Feb.	11 A	20 Ma ij
2822	11	xvj	b	28·12·M	28 M	30 Ian.	16 Feb.	3 A	12 Ma ij
2823	12	xx vij	A	16·9·A	16 A	19 Feb.	8 Mar.	23 A	1 Iun ij
2824	13	vii i	g f	4·18·A	5 A	4 Feb.	21 Feb.	7 A	16 Ma ij
2825	14	xi x	e	25·3·M	25 M	26 Ian.	12 Feb.	30 M	8 Ma ij
2826	15	*	d	13·1·A	13 A	15 Feb.	4 Mart.	19 A	28 Ma ij
2827	16	xj	c	2·9·A	2 A	31 Ian.	17 Feb.	4 A	13 Ma ij
2828	17	xx ij	b A	21·18·M	22 M	23 Ian.	9 Feb.	26 M	4 Ma ij
2829	18	iiij	g	9·16·A	10 A	11 Feb.	28 Feb.	15 A	24 Ma ij
2830	19	xii ii	f	30·1·M	30 M	27 Ian.	13 Feb.	31 M	9 Ma ii
2831	1	xx vj	e	17·22·A	17 A	16 Feb.	5 Mar.	20 A	29 Ma

Anni	Aur.	Ep				Septu	Dies	P	Asc
Domi	Nu	act	Lit. Dnic.	Plenilunium	Luna	agesi	Ciner	as	ens
ni	m.	æ	Greg.	(D·H·mens.)	xiiiij	ma	um	ch	io
								a	
									ij

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The *Table of the Movable Feasts* continues, in its paired arrangement: each span of years is set out both in the old (Julian) calendar and in the new (Gregorian) calendar. This opening carries the old-calendar leaf for the years 2776–2831, then the new-calendar and old-calendar leaves for the years 2832–2887.

Throughout, in the Luna 14 and Easter columns the month is abbreviated to a single letter: **A** = *Aprilis* (April), **M** = *Martii* (March). Julian leap years carry two Dominical letters. Epacts are printed as Roman numerals; the epact 30 is set with an asterisk (*). Golden numbers and the "difference" figure are Arabic. Month abbreviations (Maij, Iunij, Ian., Feb., Mar., Nou., Dec.) are transcribed as printed.

Old (Julian) calendar — years 2776–2831

Columns: A.D. · Pentecost · Corpus Christi · Indiction · Sundays after Pentecost · First Sunday of Advent · Dominical letter(s), old calendar · Luna 14, old calendar · Easter, old calendar · Days by which the new-calendar Easter differs from the old-calendar Easter.

A.	Pentec	Corpus	In	Sun. p.	Adve	Dom.	Luna	East	Di
D.	ost	Christi	d.	Pent.	nt	lett.	14	er	ff.
2	16 Maij	27 Maij	4	27	28	f e	13 A	20	42
7					Nou.			A	
7									
6									
2	5 Iunij	16 Iunij	5	24	27	d	2 A	5 A	7
7					Nou.				
7									
7									
2	28 Maij	8 Iunij	6	26	3	c	22 M	28	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
7 7 8					Dec.			M	
2 7 7 9	13 Maij	24 Maij	7	28	2 Dec.	b	10 A	17 A	42
2 7 8 0	1 Iunij	12 Iunij	8	25	30 Nou.	A g	30 M	1 A	7
2 7 8 1	24 Maij	4 Iunij	9	26	29 Nou.	f	18 A	21 A	35
2 7 8 2	13 Iunij	24 Iunij	1 0	23	28 Nou.	e	7 A	13 A	7
2 7 8 3	29 Maij	9 Iunij	1 1	25	27 Nou.	d	27 M	29 M	7
2 7 8 4	20 Maij	31 Maij	1 2	27	2 Dec.	c b	15 A	17 A	35
2 7 8 5	9 Iunij	20 Iunij	1 3	24	1 Dec.	A	4 A	9 A	7
2 7 8 6	25 Maij	5 Iunij	1 4	26	30 Nou.	g	24 M	25 M	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
2 7 8 7	17 Maij	28 Maij	1 5	27	29 Nou.	f	12 A	14 A	35
2 7 8 8	5 Iunij	16 Iunij	1	24	27 Nou.	e d	1 A	5 A	7
2 7 8 9	28 Maij	8 Iunij	2	26	3 Dec.	c	21 M	28 M	7
2 7 9 0	13 Maij	24 Maij	3	28	2 Dec.	b	9 A	10 A	35
2 7 9 1	2 Iunij	13 Iunij	4	25	1 Dec.	A	29 M	2 A	7
2 7 9 2	24 Maij	4 Iunij	5	26	29 Nou.	g f	17 A	21 A	35
2 7 9 3	6 Iunij	17 Iunij	6	24	28 Nou.	e	5 A	6 A	7
2 7 9 4	29 Maij	9 Iunij	7	25	27 Nou.	d	25 M	29 M	7
2 7 9	21 Maij	1 Iunij	8	27	3 Dec.	c	13 A	18 A	35

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
5									
2 7 9 6	9 Iunij	20 Iunij	9	24	1 Dec.	b A	2 A	9 A	7
2 7 9 7	25 Maij	5 Iunij	1 0	26	30 Nou.	g	22 M	25 M	7
2 7 9 8	17 Maij	28 Maij	1 1	27	29 Nou.	f	10 A	14 A	35
2 7 9 9	6 Iunij	17 Iunij	1 2	24	28 Nou.	e	30 M	6 A	7
2 8 0 0	21 Maij	1 Iunij	1 3	27	3 Dec.	d c	18 A	25 A	42
2 8 0 1	10 Iunij	21 Iunij	1 4	24	2 Dec.	b	7 A	10 A	7
2 8 0 2	2 Iunij	13 Iunij	1 5	25	1 Dec.	A	27 M	2 A	7
2 8 0 3	18 Maij	29 Maij	1	27	30 Nou.	g	15 A	22 A	42
2 8	6 Iunij	17 Iunij	2	24	28 Nou.	f e	4 A	6 A	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
0 4									
2 8 0 5	29 Maij	9 Iunij	3	25	27 Nou.	d	24 M	29 M	7
2 8 0 6	14 Maij	25 Maij	4	28	3 Dec.	c	12 A	18 A	42
2 8 0 7	3 Iunij	14 Iunij	5	25	2 Dec.	b	1 A	3 A	7
2 8 0 8	25 Maij	5 Iunij	6	26	30 Nou.	A g	21 M	25 M	7
2 8 0 9	17 Maij	28 Maij	7	27	29 Nou.	f	9 A	14 A	35
2 8 1 0	30 Maij	10 Iunij	8	25	28 Nou.	e	29 M	30 M	7
2 8 1 1	22 Maij	2 Iunij	9	26	27 Nou.	d	17 A	19 A	35
2 8 1 2	10 Iunij	21 Iunij	1 0	24	2 Dec.	c b	5 A	10 A	7
2	26 Maij	6 Iunij	1	26	1	A	25 M	26	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
8 1 3			1		Dec.			M	
2 8 1 4	18 Maij	29 Maij	1 2	27	30 Nou.	g	13 A	15 A	35
2 8 1 5	7 Iunij	18 Iunij	1 3	24	29 Nou.	f	2 A	7 A	7
2 8 1 6	29 Maij	9 Iunij	1 4	25	27 Nou.	e d	22 M	29 M	7
2 8 1 7	14 Maij	25 Maij	1 5	28	3 Dec.	c	10 A	11 A	35
2 8 1 8	3 Iunij	14 Iunij	1	25	2 Dec.	b	30 M	3 A	7
2 8 1 9	26 Maij	6 Iunij	2	26	1 Dec.	A	18 A	23 A	35
2 8 2 0	7 Iunij	18 Iunij	3	24	29 Nou.	g f	7 A	14 A	14
2 8 2 1	30 Maij	10 Iunij	4	25	28 Nou.	e	27 M	30 M	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
2 8 2 2	22 Maij	2 Iunij	5	26	27 Nou.	d	15 A	19 A	35
2 8 2 3	11 Iunij	22 Iunij	6	24	3 Dec.	c	4 A	11 A	7
2 8 2 4	26 Maij	6 Iunij	7	26	1 Dec.	b A	24 M	26 M	7
2 8 2 5	18 Maij	29 Maij	8	27	30 Nou.	g	12 A	15 A	35
2 8 2 6	7 Iunij	18 Iunij	9	24	29 Nou.	f	1 A	7 A	7
2 8 2 7	23 Maij	3 Iunij	1 0	26	28 Nou.	e	21 M	23 M	7
2 8 2 8	14 Maij	25 Maij	1 1	28	3 Dec.	d c	9 A	11 A	35
2 8 2 9	3 Iunij	14 Iunij	1 2	25	2 Dec.	b	29 M	3 A	7
2 8 3	19 Maij	30 Maij	1 3	27	1 Dec.	A	17 A	23 A	42

A. D.	Pentec ost	Corpus Christi	In d.	Sun. p. Pent.	Adve nt	Dom. lett.	Luna 14	East er	Di ff.
0									
2	8 Iunij	19 Iunij	1	24	30	g	5 A	8 A	7
8			4		Nou.				
3									
1									

New (Gregorian) calendar — *Tabula Festorum* — years 2832–2887

Columns: A.D. · Golden number · Epact · Dominical letter(s), Gregorian · Mean full moon, Gregorian calendar (Day · Hour · month) · Luna 14, Gregorian · Septuagesima · Ash Wednesday (*Dies Cinerum*) · Easter, new calendar · Ascension.

The mean-full-moon **hour** is the smallest type on the leaf and does not always resolve on the scan; the hour figures are provisional and should not be treated as citation-grade.

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
2 8 3 2	vij	d c	6 · 7 A	6 A	8 Feb.	25 Feb.	11 A	20 Maij
2 8 3 3	xvi ij	b	26 · 16 M	26 M	23 Ian.	9 Feb.	27 M	5 Maij
2 8 3 4	xxi x	A	14 · 13 A	14 A	12 Feb.	1 Mar.	16 A	25 Maij
2 8 3 5	x	g	3 · 22 A	3 A	4 Feb.	21 Feb.	8 A	17 Maij

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
2 8 3 6	xxj	f e	23 · 7 M	23 M	27 Ian.	13 Feb.	30 M	8 Maij
2 8 3 7	ij	d	11 · 4 A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
2 8 3 8	xii j	c	31 · 13 M	31 M	31 Ian.	17 Feb.	4 A	13 Maij
2 8 3 9	xxi iij	b	19 · 11 A	18 A	20 Feb.	9 Feb. [recte: 9 Mar.]	24 A	2 Iunij
2 8 4 0	v	A g	7 · 20 A	8 A	12 Feb.	29 Feb.	15 A	24 Maij
2 8 4 1	xvj	f	28 · 4 M	28 M	27 Ian.	13 Feb.	31 M	9 Maij
2 8 4 2	xx vij	e	16 · 2 A	16 A	16 Feb.	5 Mar.	20 A	29 Maij
2 8 4 3	vii j	d	5 · 11 A	5 A	8 Feb.	25 Feb.	12 A	21 Maij
2	xix	c b	24 · 20 M	25	24 Ian.	10 Feb.	27	5

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
8 4 4				M			M	Maij
2 8 4 5	*	A	12 · 17 A	13 A	12 Feb.	1 Mar.	16 A	25 Maij
2 8 4 6	xj	g	2 · 2 A	2 A	4 Feb.	21 Feb.	8 A	17 Maij
2 8 4 7	xxi j	f	22 · 11 M	22 M	20 Ian.	6 Febr.	24 M	2 Maij
2 8 4 8	iiij	e d	9 · 8 A	10 A	9 Feb.	26 Feb.	12 A	21 Maij
2 8 4 9	xii ij	c	29 · 17 M	30 M	31 Ian.	17 Feb.	4 A	13 Maij
2 8 5 0	xx vj	b	17 · 15 A	17 A	20 Feb.	9 Mar.	24 A	2 Iunij
2 8 5 1	vij	A	6 · 23 A	6 A	5 Feb.	22 Feb.	9 A	18 Maij
2 8	xvi ij	g f	26 · 8 M	26 M	28 Ian.	14 Feb.	31 M	9 Maij

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
5 2								
2 8 5 3	xxi x	e	14 · 6 A	14 A	16 Feb.	5 Mart.	20 A	29 Maij
2 8 5 4	x	d	3 · 15 A	3 A	1 Feb.	18 Feb.	5 A	14 Maij
2 8 5 5	xxj	c	23 · 23 M	23 M	24 Ian.	10 Feb.	28 M	6 Maij
2 8 5 6	ij	b A	10 · 21 A	11 A	13 Feb.	1 Mar.	16 A	25 Maij
2 8 5 7	xii j	g	31 · 6 M	31 M	28 Ian.	14 Feb.	1 A	10 Maij
2 8 5 8	xxi iij	f	19 · 3 A	18 A	17 Feb.	6 Mar.	21 A	30 Maij
2 8 5 9	v	e	8 · 12 A	8 A	9 Feb.	26 Feb.	13 A	22 Maij
2 8 6	xvj	d c	27 · 21 M	28 M	1 Feb.	18 Feb.	4 A	13 Maij

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
0								
2 8 6 1	xx vij	b	15 · 19 A	16 A	13 Feb.	2 Mar.	17 A	26 Maij
2 8 6 2	vii j	A	5 · 3 A	5 A	5 Feb.	22 Feb.	9 A	18 Maij
2 8 6 3	xix	g	25 · 12 M	25 M	28 Ian.	14 Feb.	1 A	10 Maij
2 8 6 4	*	f e	12 · 10 A	13 A	17 Feb.	5 Mar.	20 A	29 Maij
2 8 6 5	xj	d	1 · 18 A	2 A	1 Feb.	18 Feb.	5 A	14 Maij
2 8 6 6	xxi j	c	22 · 3 M	22 M	24 Ian.	10 Feb.	28 M	6 Maij
2 8 6 7	iiij	b	10 · 1 A	10 A	13 Feb.	2 Mar.	17 A	26 Maij
2 8 6 8	xii ij	A g	29 · 10 M	30 M	29 Ian.	15 Feb.	1 A	10 Maij

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
2 8 6 9	xx vj	f	17 · 7 A	17 A	17 Feb.	6 Mar.	21 A	30 Maij
2 8 7 0	vij	e	6 · 16 A	6 A	9 Feb.	26 Feb.	13 A	22 Maij
2 8 7 1	xvi ij	d	27 · 1 M	26 M	25 Ian.	11 Feb.	29 M	7 Maij
2 8 7 2	xxi x	c b	13 · 22 A	14 A	14 Feb.	2 Mar.	17 A	26 Maij
2 8 7 3	x	A	3 · 7 A	3 A	5 Feb.	22 Feb.	9 A	18 Maij
2 8 7 4	xxj	g	23 · 16 M	23 M	21 Ian.	7 Feb.	25 M	3 Maij
2 8 7 5	ij	f	11 · 14 A	11 A	10 Feb.	27 Feb.	14 A	23 Maij
2 8 7 6	xii j	e d	30 · 22 M	31 M	2 Feb.	19 Feb.	5 A	14 Maij
2	xxi	c	18 · 20 A	18	21 Feb.	10 Mar.	25	3

A . D .	Ep act	Dom. lett.	Full moon D·H·mo.	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Asce nsion
8 7 7	iiij			A			A	Iunij
2 8 7 8	v	b	8 · 5 A	8 A	6 Feb.	23 Feb.	10 A	19 Maij
2 8 7 9	xvj	A	28 · 13 M	28 M	29 Ian.	15 Feb.	2 A	11 Maij
2 8 8 0	xx vij	g f	15 · 11 A	16 A	18 Feb.	6 Mar.	21 A	30 Maij
2 8 8 1	vii j	e	4 · 20 A	5 A	2 Feb.	19 Feb.	6 A	15 Maij
2 8 8 2	xix	d	25 · 5 M	25 M	25 Ian.	11 Feb.	29 M	7 Maij
2 8 8 3	*	c	13 · 2 A	13 A	14 Feb.	3 Mar.	18 A	27 Maij
2 8 8 4	xj	b A	1 · 11 A	2 A	6 Feb.	23 Feb.	9 A	18 Maij
2 8	xxi j	g	21 · 20 M	22 M	21 Ian.	7 Feb.	25 M	3 Maij

A									
.				Lun				Ea	
D	Ep	Dom.	Full moon	a	Septuag			ste	Asce
.	act	lett.	D·H·mo.	14	esima	Ash Wed.		r	nsion
8									
5									
2	iiij	f	9 · 17 A	10	10 Feb.	27 Feb.		14	23
8				A				A	Maij
8									
6									
2	xii	e	30 · 2 M	30	2 Feb.	19 Feb.		6	15
8	ij			M				A	Maij
8									
7									

Old (Julian) calendar — years 2832–2887

Columns: A.D. · Pentecost · Corpus Christi · Indiction · Sundays after Pentecost · First Sunday of Advent · Dominical letter(s), old calendar · Luna 14, old calendar · Easter, old calendar · Diff.

A										
.				I						
D	Pente			n	Sun. p.	Adv	Dom.	Lun	Eas	Di
.	cost	Corpus Christi		d.	Pent.	ent	lett.	a 14	ter	ff.
2	30	10 Iunij		1	25	28	f e	25	30	7
8	Maij			5		Nou		M	M	
3						.				
2										
2	15	26 Maij		1	27	27	d	13 A	19	42
8	Maij					Nou			A	
3						.				
3										
2	4 Iunij	15 Iunij		2	25	3	c	2 A	4 A	7
8						Dec.				
3										
4										
2	27	7 Iunij		3	26	2	b	22	27	7

A . D . .	Pente cost	Corpus Christi	I n d.	Sun. p. Pent.	Adv ent	Dom. lett.	Lun a 14	Eas ter	Di ff.
8 3 5	Maij				Dec.		M	M	
2 8 3 6	18 Iunij	29 Iunij	4	27	30 Nou .	A g	10 A	15 A	35
2 8 3 7	31 Maij	11 Iunij	5	25	29 Nou .	f	30 M	31 M	7
2 8 3 8	23 Maij	3 Iunij	6	26	28 Nou .	e	18 A	20 A	35
2 8 3 9	12 Iunij	23 Iunij	7	23	27 Nou .	d	7 A	12 A	7
2 8 4 0	3 Iunij	14 Iunij	8	25	2 Dec.	c b	27 M	3 A	7
2 8 4 1	19 Maij	30 Maij	9	27	1 Dec.	A	15 A	16 A	35
2 8 4 2	8 Iunij	19 Iunij	1 0	24	30 Nou .	g	4 A	8 A	7
2 8	31 Maij	11 Iunij	1 1	25	29 Nou	f	24 M	31 M	7

[illegible]

A . D .	Pente cost	Corpus Christi	I n d.	Sun. p. Pent.	Adv ent	Dom. lett.	Lun a 14	Eas ter	Di ff.
1									
2 8 5 2	19 Maij	30 Maij	5	27	1 Dec.	b A	13 A	16 A	35
2 8 5 3	8 Iunij	19 Iunij	6	24	30 Nou .	g	2 A	8 A	7
2 8 5 4	24 Maij	4 Iunij	7	26	29 Nou .	f	22 M	24 M	7
2 8 5 5	16 Maij	27 Maij	8	27	28 Nou .	e	10 A	13 A	35
2 8 5 6	4 Iunij	15 Iunij	9	25	3 Dec.	d c	30 M	4 A	7
2 8 5 7	20 Maij	31 Maij	1 0	27	2 Dec.	b	18 A	24 A	42
2 8 5 8	9 Iunij	20 Iunij	1 1	24	1 Dec.	A	7 A	9 A	7
2 8 5 9	1 Iunij	12 Iunij	1 2	25	30 Nou .	g	27 M	1 A	7

A . D . .	Pente cost	Corpus Christi	I n d.	Sun. p. Pent.	Adv ent	Dom. lett.	Lun a 14	Eas ter	Di ff.
2 8 6 0	23 Maij	3 Iunij	1 3	26	28 Nou .	f e	15 A	20 A	35
2 8 6 1	5 Iunij	16 Iunij	1 4	24	27 Nou .	d	4 A	5 A	7
2 8 6 2	28 Maij	8 Iunij	1 5	26	3 Dec.	c	24 M	28 M	7
2 8 6 3	20 Maij	31 Maij	1	27	2 Dec.	b	12 A	17 A	35
2 8 6 4	8 Iunij	19 Iunij	2	24	30 Nou .	A g	1 A	8 A	7
2 8 6 5	24 Maij	4 Iunij	3	26	29 Nou .	f	21 M	24 M	7
2 8 6 6	16 Maij	27 Maij	4	27	28 Nou .	e	9 A	13 A	35
2 8 6 7	5 Iunij	16 Iunij	5	24	27 Nou .	d	29 M	5 A	7
2	20	31 Maij	6	27	2	c b	17 A	24	42

A . D .	Pente cost	Corpus Christi	I n d.	Sun. p. Pent.	Adv ent	Dom. lett.	Lun a 14	Eas ter	Di ff.
8 6 8	Maij				Dec.			A	
2 8 6 9	9 Iunij	20 Iunij	7	24	1 Dec.	A	5 A	9 A	7
2 8 7 0	1 Iunij	12 Iunij	8	25	30 Nou .	g	25 M	1 A	7
2 8 7 1	17 Maij	28 Maij	9	27	29 Nou .	f	13 A	14 A	35
2 8 7 2	5 Iunij	16 Iunij	1 0	24	27 Nou .	e d	2 A	5 A	7
2 8 7 3	28 Maij	8 Iunij	1 1	26	3 Dec.	c	22 M	28 M	7
2 8 7 4	13 Maij	24 Maij	1 2	28	2 Dec.	b	10 A	17 A	42
2 8 7 5	2 Iunij	13 Iunij	1 3	25	1 Dec.	A	30 M	2 A	7
2 8	24 Maij	4 Iunij	1 4	26	29 Nou	g f	18 A	21 A	35

A			I			Adv	Dom.	Lun	Eas	Di
.	Pente	Corpus Christi	n	Sun. p.		ent	lett.	a 14	ter	ff.
.	cost		d.	Pent.						
4										
2	13	24 Maij	8	28		2	b	9 A	10	35
8	Maij					Dec.			A	
8										
5										
2	2 Iunij	13 Iunij	9	25		1	A	29	2 A	7
8						Dec.		M		
8										
6										
2	25	5 Maij [recte: 5	1	26		30	g	17 A	22	35
8	Maij	Iunij]	0			Nou			A	
8						.				
7										

Caput XXII — *Tabula Festorum Mobilium Temporaria* (continued)

The *Table of the Movable Feasts for the Time Being* continues, in its paired arrangement of facing leaves: each new-calendar (Gregorian) leaf is completed by an old-calendar (*veteris*) leaf covering the same span of years. This batch holds three leaves — the new-calendar leaf for 2888–2943 (folio 426), its old-calendar counterpart for the same years (folio 427), and the new-calendar leaf for 2944–2999 (folio 428). The old-calendar counterpart of the final leaf falls on the following opening.

In the full-moon, Luna 14, and Easter columns the month is marked by a single letter: **A** = *Aprilis* (April), **M** = *Martius* (March). Julian (old-calendar) leap years — every year divisible by 4, centuries included — carry **two** dominical letters; Gregorian leap years exclude the non-400 centuries. The year **2900** is therefore the calendar-divergence point on these leaves: Gregorian-common (single dominical letter on the new leaf) but Julian-leap (two letters on the old leaf), and the raw day-offset between the two Easters widens from 19 to 20 days across it — reflected in the *Diff.* column, where values of 42 appear around 2898–2901.

Folio 426 — new calendar (*Calend. Gregor.*), A.D. 2888–2943

Column headings (verbatim): *Anni Domini* (A.D.) | *Aur. Num.* (golden number) | *Epactæ* (epact) | *Litteræ Dominicales Caléd. Gregor.* (Gregorian dominical letters) | *Plenilunia media Cal. Gregor.* — *D. H.* (mean full moon, Gregorian calendar: day · hour · month) | *Lunæ xiiii. Calendarii Gregoriani* (Luna 14) | *Septuagesima* | *Dies Cinerum* (Ash Wednesday) | *Pascha Calend. novi* (Easter, new calendar) | *Ascensio Domini* (Ascension).

		D o		Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed. Mart.	Eas ter A	Ascens ion Maij
A.	G Epa	m							
D.	N ct	.							
2 8 8 8	1 xxv i	d c	17 · 0 · A	17 A	15 Febr.	3 Mart.	18 A	27 Maij	
2 8 8 9	2 vii	b	6 · 9 · A	6 A	6 Febr.	23 Febr.	10 A	19 Maij	
2 8 9 0	3 xvii i	A	26 · 17 · M	26 M	29 Ian.	15 Febr.	2 A	11 Maij	
2 8 9 1	4 xxi x	g	14 · 15 · A	14 A	11 Febr.	28 Febr.	15 A	24 Maij	
2 8 9 2	5 x	f e	3 · 0 · A	3 A	3 Febr.	20 Febr.	6 A	15 Maij	
2 8 9 3	6 xxi	d	23 · 9 · M	23 M	25 Ian.	11 Febr.	29 M	7 Maij	
2	7 ii	c	11 · 6 · A	11 A	14 Febr.	3	18	27	

A. D.	G N	Epa ct	D o m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
8							Mart.	A	Maij
9									
4									
2	8	xiii	b	31 · 15 · M	31 M	30 Ian.	16	3 A	12
8							Febr.		Maij
9									
5									
2	9	xxii	A	18 · 12 · A	18 A	19 Febr.	7	22	31
8		ii	g				Mar.	A	Maij
9									
6									
2	1	v	f	7 · 21 · A	8 A	10 Febr.	27	14	23
8		0					Febr.	A	Maij
9									
7									
2	1	xvi	e	28 · 6 · M	28 M	26 Ian.	12	30	8 Maij
8		1					Febr.	M	
9									
8									
2	1	xxv	d	16 · 4 · A	16 A	15 Febr.	4	19	28
8		2 ii					Mart.	A	Maij
9									
9									
2	1	vii	c	6 · 12 · A	6 A	7 Febr.	24	11	20
9		3					Febr.	A	Maij
0									
0									
2	1	xvii	b	25 · 21 · M	26 M	23 Ian.	9	27	5 Maij
9		4 i					Febr.	M	
0									
1									
2	1	xxi	A	13 · 19 · A	14 A	12 Febr.	1	16	25
9		5 x					Mart.	A	Maij

		D o							
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion	
0 2									
2 9 0	1 x 6	g	3 · 4 · A	3 A	4 Febr.	21 Febr.	8 A	17 Maij	
0 3									
2 9 0	1 xxi 7	f e	22 · 12 · M	23 M	27 Ian.	13 Febr.	30 M	8 Maij	
0 4									
2 9 0	1 ii 8	d	10 · 10 · A	11 A	8 Febr.	25 Febr.	12 A	21 Maij	
0 5									
2 9 0	1 xiii 9	c	30 · 19 · M	31 M	31 Ian.	17 Febr.	4 A	13 Maij	
0 6									
2 9 0	1 xxv 9	b	18 · 16 · A	18 A	20 Febr.	9 Mart.	24 A	2 Iunij	
0 7									
2 9 0	2 vi 9	A g	7 · 1 · A	7 A	5 Febr.	22 Febr.	8 A	17 Maij	
0 8									
2 9 0	3 xvii 9	f	27 · 10 · M	27 M	27 Ian.	13 Febr.	31 M	9 Maij	
0 9									
2 9 1	4 xxv iii	e	15 · 7 · A	15 A	16 Febr.	5 Mart.	20 A	29 Maij	

A. D.	G Epa N ct	D o m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
0								
2 9 1 1	5 ix	d	4 · 16 · A	4 A	1 Febr.	18 Febr.	5 A	14 Maij
2 9 1 2	6 xx	c b	24 · 1 · M	24 M	24 Ian.	10 Febr.	27 M	5 Maij
2 9 1 3	7 i	A	11 · 23 · A	12 A	12 Febr.	1 Mart.	16 A	25 Maij
2 9 1 4	8 xii	g	1 · 7 · A	1 A	4 Febr.	21 Febr.	8 A	17 Maij
2 9 1 5	9 xxii i	f	21 · 16 · M	21 M	20 Ian.	6 Febr.	24 M	2 Maij
2 9 1 6	1 iiia 0	e d	8 · 14 · A	9 A	9 Febr.	26 Febr.	12 A	21 Maij
2 9 1 7	1 xv 1	c	28 · 23 · M	29 M	31 Ian.	17 Febr.	4 A	13 Maij
2 9 1 8	1 xxv 2 i	b	16 · 20 · A	17 A	20 Febr.	9 Mart.	24 A	2 Iunij

A. D.	G Epa N ct	D o m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
2 9 1 9	1 vii 3	A	6 · 5 · A	6 A	5 Febr.	22 Febr.	9 A	18 Maij
2 9 2 0	1 xvii 4 i	g f	25 · 14 · M	26 M	28 Ian.	14 Febr.	31 M	9 Maij
2 9 2 1	1 xxi 5 x	e	13 · 11 · A	14 A	16 Febr.	5 Mart.	20 A	29 Maij
2 9 2 2	1 x 6	d	2 · 20 · A	3 A	1 Febr.	18 Febr.	5 A	14 Maij
2 9 2 3	1 xxi 7	c	23 · 5 · A	23 M	24 Ian.	10 Febr.	28 M	6 Maij
2 9 2 4	1 ij 8	b A	10 · 2 · A	11 A	13 Febr.	1 Mart.	16 A	25 Maij
2 9 2 5	1 xiii 9	g	30 · 11 · M	31 M	28 Ian.	14 Febr.	1 A	10 Maij
2 9 2 6	1 xxv 9	f	18 · 9 · A	18 A	17 Febr.	6 Mart.	21 A	30 Maij
2	2 vi	e	7 · 18 · A	7 A	9 Febr.	26	13	22

		D o							
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion	
9 2 7						Febr.	A	Maij	
2 9 2 8	3 xvii	d c	27 · 2 · M	27 M	25 Ian.	11 Febr.	28 M	6 Maij	
2 9 2 9	4 xxv iii	b	15 · 0 · A	15 A	13 Febr.	2 Mart.	17 A	26 Maij	
2 9 3 0	5 ix	A	4 · 9 · A	4 A	5 Febr.	22 Febr.	9 A	18 Maij	
2 9 3 1	6 xx	g	24 · 18 · M	24 M	21 Ian.	7 Febr.	25 M	3 Maij	
2 9 3 2	7 i	f e	11 · 15 · A	12 A	10 Febr.	27 Febr.	13 A	22 Maij	
2 9 3 3	8 xii	d	1 · 0 · A	1 A	1 Febr.	18 Febr.	5 A	14 Maij	
2 9 3 4	9 xxii i	c	21 · 9 · M	21 M	24 Ian.	10 Febr.	28 M	6 Maij	
2 9	1 iiiii 0	b	9 · 6 · A	9 A	6 Febr.	23 Febr.	10 A	19 Maij	

		D o							
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion	
3									
5									
2 9 3 6	1 xv 1	A g	28 · 15 · M	29 M	29 Ian.	15 Febr.	1 A	10 Maij	
3									
6									
2 9 3 7	1 xxv 2 i	f	16 · 13 · A	17 A	17 Febr.	6 Mart.	21 A	30 Maij	
3									
7									
2 9 3 8	1 vii 3	e	5 · 21 · A	6 A	9 Febr.	26 Febr.	13 A	22 Maij	
3									
8									
2 9 3 9	1 xvii 4 i	d	26 · 6 · M	26 M	25 Ian.	11 Febr.	29 M	7 Maij	
3									
9									
2 9 4 0	1 xxi 5 x	c b	13 · 4 · A	14 A	14 Febr.	2 Mart.	17 A	26 Maij	
3									
4									
2 9 4 1	1 x 6	A	2 · 13 · A	3 A	5 Febr.	22 Febr.	9 A	18 Maij	
3									
4									
2 9 4 2	1 xxi 7	g	22 · 21 · M	23 M	21 Ian.	7 Febr.	25 M	3 Maij	
3									
4									
2 9 4	1 ii 8	f	10 · 19 · A	11 A	10 Febr.	27 Febr.	14 A	23 Maii	

		D o							
A.	G Epa	m			Lun	Septuages	Ash	Eas	Ascens
D.	N ct	.	Full moon (D · H · mo)	a 14	ima		Wed.	ter	ion

3

Caput XXII — *Mobilium Temporaria*: Folio 427 — old calendar (*Calend. veteris*), A.D. 2888–2943

Column headings (verbatim): *Anni Domini* | *Pentecoste* (Pentecost) | *Corpus Domini* (Corpus Christi) | *Indictio* (indiction) | *Dñicæ post Pentecosten* (Sundays after Pentecost) | *Dominica prima Aduentus* (First Sunday of Advent) | *Literæ Dñicales Calendarij veteris* (old-calendar dominical letters) | *Lunæ xiiij. Calendarij veteris* (Luna 14, old calendar) | *Pascha Calendarij veteris* (Easter, old calendar) | *Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt* (days by which the new-calendar Easter differs from the old-calendar Easter).

A									
.									
D	Pent	Corpus	Ind	Sund. p.	Adv	Dom.	Luna 14	Easter	Di
.	ecost	Christi	ict.	Pent.	ent I	(vet.)	(vet.)	(vet.)	ff.
2	6	17 Iunij	11	24	28	f e	5 A	6 A	7
8	Iunij				Nou.				
8									
8									
2	29	9 Iunij	12	25	27	d	25 M	29 M	7
8	Maij				Nou.				
8									
9									
2	21	1 Iunij	13	27	3	c	13 A	18 A	3
8	Maij				Dec.				5
9									
0									
2	3	14 Iunij	14	25	2	b	2 A	3 A	7
8	Iunij				Dec.				
9									
1									
2	25	5 Iunij	15	26	30	A g	22 M	25 M	7

A										
.										
D	Pent	Corpus	Ind	Sund. p.	Adv	Dom.	Luna 14	Easter	Di	
.	ecost	Christi	ict.	Pent.	ent I	(vet.)	(vet.)	(vet.)	ff.	
8	Maij				Nou.					
9										
2										
2	17	28 Maij	1	27	29	f	10 A	14 A	3	
8	Maij				Nou.				5	
9										
3										
2	6	17 Iunij	2	24	28	e	30 M	6 A	7	
8	Iunij				Nou.					
9										
4										
2	22	2 Iunij	3	26	27	d	18 A	19 A	3	
8	Maij				Nou.				5	
9										
5										
2	10	21 Iunij	4	24	2	c b	7 A	10 A	7	
8	Iunij				Dec.					
9										
6										
2	2	13 Iunij	5	25	1	A	27 M	2 A	7	
8	Iunij				Dec.					
9										
7										
2	18	29 Maij	6	27	30	g	15 A	22 A	4	
8	Maij				Nou.				2	
9										
8										
2	7	18 Iunij	7	24	29	f	4 A	7 A	7	
8	Iunij				Nou.					
9										
9										
2	30	10 Iunij	8	25	28	e d	24 M	29 M	7	
9	Maij				Nou.					

6

D .	Pent ecost	Corpus Christi	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
8									
2 9 0 9	19 Maij	30 Maij	2	27	1 Dec.	g	13 A	15 A	3 5
2 9 1 0	8 Iunij	19 Iunij	3	24	30 Nou.	f	2 A	7 A	7
2 9 1 1	24 Maij	4 Iunij	4	26	29 Nou.	e	22 M	23 M	7
2 9 1 2	15 Maij	26 Maij	5	27	27 Nou.	d c	10 A	11 A	3 5
2 9 1 3	4 Iunij	15 Iunij	6	25	3 Dec.	b	30 M	3 A	7
2 9 1 4	27 Maij	7 Iunij	7	26	2 Dec.	A	18 A	23 A	3 5
2 9 1 5	12 Maij	23 Maij	8	28	1 Dec.	g	7 A	8 A	3 5
2 9 1 6	21 Maij	11 Iunij	9	25	29 Nou.	f e	27 M	30 M	7

A

D . .	Pent ecost	Corpus Christi	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
2 9 1 7	23 Maij	3 Iunij	10	26	28 Nou.	d	15 A	19 A	3 5
2 9 1 8	12 Iunij	23 Iunij	11	23	27 Nou.	c	4 A	11 A	7
2 9 1 9	28 Maij	8 Iunij	12	26	3 Dec.	b	24 M	27 M	7
2 9 2 0	19 Maij	30 Maij	13	27	1 Dec.	A g	12 A	15 A	3 5
2 9 2 1	8 Iunij	19 Iunij	14	24	30 Nou.	f	1 A	7 A	7
2 9 2 2	24 Maij	4 Iunij	15	26	29 Nou.	e	21 M	23 M	7
2 9 2 3	16 Maij	27 Maij	1	27	28 Nou.	d	9 A	12 A	3 5
2 9 2 4	4 Iunij	15 Iunij	2	25	3 Dec.	c b	29 M	3 A	7
2	20	31 Maij	3	27	2	A	17 A	23 A	4

A										
.										
D	Pent	Corpus	Ind	Sund. p.	Adv	Dom.	Luna 14	Easter	Di	
.	ecost	Christi	ict.	Pent.	ent I	(vet.)	(vet.)	(vet.)	ff.	
9	Maij				Dec.				2	
2										
5										
2	9	20 Iunij	4	24	1	g	5 A	8 A	7	
9	Iunij				Dec.					
2										
6										
2	1	12 Iunij	5	25	30	f	25 M	31 M	7	
9	Iunij				Nou.					
2										
7										
2	16	27 Maij	6	27	28	e d	13 A	19 A	4	
9	Maij				Nou.				2	
2										
8										
2	5	16 Iunij	7	24	27	c	2 A	4 A	7	
9	Iunij				Nou.					
2										
9										
2	28	8 Iunij	8	26	3	b	22 M	27 M	7	
9	Maij				Dec.					
2										
3										
0										
2	13	24 Maij	9	28	2	A	10 A	16 A	4	
9	Maij				Dec.				2	
2										
3										
1										
2	1	12 Iunij	10	25	30	g f	30 M	31 M	7	
9	Iunij				Nou.					
2										
3										
2										
2	24	4 Iunij	11	26	29	e	18 A	20 A	3	
9	Maij				Nou.				5	

A D .	Pent ecost	Corpus Christi	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
3									
3									
2 9 3 4	16 Maij	27 Maij	12	27	28 Nou.	d	7 A	12 A	3 5
2 9 3 5	29 Maij	9 Iunij	13	25	27 Nou.	c	27 M	28 M	7
2 9 3 6	20 Maij	31 Maij	14	27	2 Dec.	b A	15 A	16 A	3 5
2 9 3 7	9 Iunij	20 Iunij	15	24	1 Dec.	g	4 A	8 A	7
2 9 3 8	1 Iunij	12 Iunij	1	25	30 Nou.	f	24 M	31 M	7
2 9 3 9	17 Maij	28 Maij	2	27	29 Nou.	e	12 A	13 A	3 5
2 9 4 0	5 Iunij	16 Iunij	3	24	27 Nou.	d c	1 A	4 A	7
2 9 4	28 Maij	8 Iunij	4	26	3 Dec.	b	21 M	27 M	7

D .	Pent ecost	Corpus Christi	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
1									
2 9 4 2	13 Maij	24 Maij	5	28	2 Dec.	A	9 A	16 A	4 2
2 9 4 3	2 Iunij	13 Iunij	6	25	1 Dec.	g	29 M	1 A	7

Column headings as folio 426.

		D o						
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
2 9 4 4	1 xiii 9	e d	3 · 4 · M	31 M	2 Febr.	19 Febr.	5 A	14 Maij
2 9 4 5	1 xxv	c	18 · 1 · A	18 A	21 Febr.	10 Mart.	25 A	3 Iunij
2 9 4 6	2 vi	b	7 · 10 · A	7 A	6 Febr.	23 Febr.	10 A	19 Maij
2 9 4 7	3 xvii	A	27 · 19 · M	27 M	29 Ian.	15 Febr.	2 A	11 Maij

		D o m		Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
A. D.	G Epa N ct	.							
2 9 4 8	4 xxv iii	g f	14 · 17 · A	15 A	18 Febr.	6 Mart.	21 A	30 Maij	
2 9 4 9	5 ix	e	4 · 1 · A	4 A	2 Febr.	19 Febr.	6 A	15 Maij	
2 9 5 0	6 xx	d	24 · 10 · M	24 M	25 Ian.	11 Febr.	29 M	7 Maij	
2 9 5 1	7 i	c	12 · 8 · A	12 A	14 Febr.	3 Mart.	18 A	27 Maij	
2 9 5 2	8 xii	b A	31 · 17 · M	1 A	30 Ian.	16 Febr.	2 A	11 Maij	
2 9 5 3	9 xxii i	g	21 · 1 · M	21 M	21 Ian.	7 Febr.	25 M	3 Maij	
2 9 5 4	1 iiia 0	f	8 · 23 · A	9 A	10 Febr.	27 Febr.	14 A	23 Maij	
2 9 5 5	1 xv 1	e	29 · 8 · M	29 M	26 Ian.	12 Febr.	30 M	8 Maij	
2	1 xxv	d	16 · 5 · A	17 A	15 Febr.	3	18	27	

		D o							
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion	
9 5 6	2 i	c				Mart.	A	Maij	
2 9 5 7	1 vii 3	b	5 · 14 · A	6 A	6 Febr.	23 Febr.	10 A	19 Maij	
2 9 5 8	1 xvii 4 i	A	25 · 23 · M	26 M	29 Ian.	15 Febr.	2 A	11 Maij	
2 9 5 9	1 xxi 5 x	g	13 · 20 · A	14 A	11 Febr.	28 Febr.	15 A	24 Maij	
2 9 6 0	1 x 6	f e	2 · 5 · A	3 A	3 Febr.	20 Febr.	6 A	15 Maij	
2 9 6 1	1 xxi 7	d	22 · 14 · M	23 M	25 Ian.	11 Febr.	29 M	7 Maij	
2 9 6 2	1 ii 8	c	10 · 12 · A	11 A	14 Febr.	3 Mart.	18 A	27 Maij	
2 9 6 3	1 xiii 9	b	30 · 20 · M	31 M	30 Ian.	16 Febr.	3 A	12 Maij	
2 9	1 xxv	A g	17 · 18 · A	18 A	19 Febr.	7 Mar.	22 A	31 Maij	

A. D.	G Epa N ct	D o m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
64								
2965	2 vi	f	7 · 3 · A	7 A	10 Febr.	27 Febr.	14 A	23 Maij
2966								
2966	3 xvii	e	27 · 12 · M	27 M	26 Ian.	12 Febr.	30 M	8 Maij
2966								
2967	4 xxviii	d	15 · 9 · A	15 A	15 Febr.	4 Mart.	19 A	28 Maij
2968								
2968	5 ix	c b	3 · 18 · A	4 A	7 Febr.	24 Febr.	10 A	19 Maij
2969								
2969	6 xx	A	24 · 3 · M	24 M	22 Ian.	8 Febr.	26 M	4 Maij
2970								
2970	7 i	g	12 · 0 · A	12 A	11 Febr.	28 Febr.	15 A	24 Maij
2971								
2971	8 xii	f	1 · 9 · A	1 A	3 Febr.	20 Febr.	7 A	16 Maij
2972								
2972	9 xxii i	e d	20 · 18 · M	21 M	19 Ian.	5 Febr.	22 M	30 Apr.

		D o						
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
2								
2 9 7 3	1 0	iiii c	8 · 15 · A	9 A	7 Febr.	24 Febr.	11 A	20 Maij
2 9 7 4	1 1	xv b	29 · 0 · M	29 M	30 Ian.	16 Febr.	3 A	12 Maij
2 9 7 5	1 2	xxv i	16 · 22 · A	17 A	19 Febr.	8 Mart.	23 A	1 Iunij
2 9 7 6	1 3	vii g f	5 · 7 · A	6 A	4 Febr.	21 Febr.	7 A	16 Maij
2 9 7 7	1 4	xvii e	25 · 15 · M	26 M	26 Ian.	12 Febr.	30 M	8 Maij
2 9 7 8	1 5	xxi x	13 · 13 · A	14 A	15 Febr.	4 Mart.	19 A	28 Maij
2 9 7 9	1 6	x c	2 · 22 · A	3 A	31 Ian.	17 Febr.	4 A	13 Maij
2 9 8 0	1 7	xxi b A	22 · 7 · M	23 M	23 Ian.	9 Febr.	26 M	4 Maij

		D o m		Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
A. D.	G Epa N ct	.							
2 9 8 1	1 ii 8	g	10 · 4 · A	11 A	11 Febr.	28 Febr.	15 A	24 Maij	
2 9 8 2	1 xiii 9	f	30 · 13 · M	31 M	3 Febr.	20 Febr.	7 A	16 Maij	
2 9 8 3	1 xxv	e	18 · 10 · A	18 A	17 Febr.	5 Mart.	20 A	29 Maij	
2 9 8 4	2 vi	d c	6 · 19 · A	7 A	7 Febr.	24 Febr.	11 A	20 Maij	
2 9 8 5	3 xvii	b	27 · 4 · M	27 M	30 Ian.	16 Febr.	3 A	12 Maij	
2 9 8 6	4 xxv iii	A	15 · 2 · A	15 A	12 Febr.	1 Mart.	16 A	25 Maij	
2 9 8 7	5 ix	g	4 · 10 · A	4 A	4 Febr.	21 Febr.	8 A	17 Maij	
2 9 8 8	6 xx	f e	23 · 19 · M	24 M	27 Ian.	13 Febr.	30 M	8 Maij	
2	7 i	d	11 · 17 · A	12 A	15 Febr.	4	19	28	

		D o							
A. D.	G Epa N ct	m .	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion	
9 8 9						Mart.	A	Maij	
2 9 9 0	8 xii	c	1 · 2 · A	1 A	31 Ian.	17 Febr.	4 A	13 Maij	
2 9 9 1	9 xxii i	b	21 · 10 · M	21 M	23 Ian.	9 Febr.	27 M	5 Maij	
2 9 9 2	1 iiia 0	A g	8 · 8 · A	9 A	12 Febr.	29 Febr.	15 A	24 Maij	
2 9 9 3	1 xv 1	f	28 · 17 · M	29 M	27 Ian.	13 Febr.	31 M	9 Maij	
2 9 9 4	1 xxv 2 i	e	16 · 14 · A	17 A	16 Febr.	5 Mart.	20 A	29 Maij	
2 9 9 5	1 vii 3	d	5 · 23 · A	6 A	8 Febr.	25 Febr.	12 A	21 Maij	
2 9 9 6	1 xvii 4 i	c b	25 · 8 · M	26 M	24 Ian.	10 Febr.	27 M	5 Maij	
2 9	1 xxi 5 x	A	13 · 5 · A	14 A	12 Febr.	1 Mart.	16 A	25 Maij	

D o m								
A.	G Epa	m	Full moon (D · H · mo)	Lun a 14	Septuages ima	Ash Wed.	Eas ter	Ascens ion
D.	N ct	.						
9								
7								
2	1 x	g	2 · 14 · A	3 A	4 Febr.	21	8 A	17
9	6					Febr.		Maij
9								
8								
2	1 xxi	f	22 · 23 · M	23 M	20 Ian.	6	24	2 Maij
9	7					Febr.	M	
9								
9								

The *Table of the Movable Feasts by Period* (Caput XXII) continues. Each opening of the table carries one span of years across two facing leaves: the left (verso) leaf gives the Gregorian data (golden number, epact, dominical letter, mean full moon, Septuagesima, Ash Wednesday, new-calendar Easter, Ascension); the right (recto) leaf continues the same years with the movable feasts (Pentecost, Corpus Christi, Indiction, Sundays after Pentecost, first Sunday of Advent) and the old-calendar (Julian, *veteris*) comparison (dominical letter, Luna 14, Easter of the old calendar, and the number of days by which the new-calendar Easter differs from it).

The first leaf below completes the opening for A.D. 2944–2999 (its Gregorian verso was on the preceding leaf); the following two leaves form the opening for A.D. 3000–3055.

Month abbreviations as printed. In the date columns: *Maij* = May, *Iunij* = June, *Nou.* = November, *Dec.* = December, *Ian.* = January, *Feb.* = February, *Mar./Mart.* = March, *Apr.* = April. In the Luna 14 and Easter columns the single letters stand for months: **A** = *Aprilis* (April), **M** = *Martij* (March). In leap years the dominical-letter cell carries two letters. The mean-full-moon column is given as day · hour · month; the hour (H) sub-column is the smallest type on the leaf.

Movable Feasts by Period — old-calendar (*veteris*) leaf, A.D. 2944–2999

Columns: A.D. | Pentecost (Pentecoste) | Corpus Christi (Corpus Domini) | Indiction (Indictio) | Sundays after Pentecost (Dies post Pentecosten) | First Sunday of Advent (Dominica prima Adventus) | Dominical letter(s), old cal. (Literæ Dominicales Calend. veteris) | Luna 14, old cal. (Lunæ xiiij Calend. veteris) | Easter, old cal. (Pascha Calendarij veteris) | Days of difference (Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt)

A			I						
.			n						
D	Pente	Corp	d	Sun. p.	Adv	Dom. let.	Luna 14	Easter	Di
.	cost	us	.	Pent.	ent I	(vet.)	(vet.)	(vet.)	ff.
2 9 4 4	24 Maij	4 Iunij	7	26	29 Nou.	f e	17 A	20 A	35
2 9 4 5	13 Iunij	24 Iunij	8	23	28 Nou.	d	5 A	12 A	7
2 9 4 6	29 Maij	9 Iunij	9	25	27 Nou.	c	25 M	28 M	7
2 9 4 7	21 Maij	1 Iunij	1 0	27	3 Dec.	b	13 A	17 A	35
2 9 4 8	9 Iunij	20 Iunij	1 1	24	1 Dec.	A g	2 A	8 A	7
2 9 4 9	25 Maij	5 Iunij	1 2	26	30 Nou.	f	22 M	24 M	7

A . D .	Pente cost	Corp us	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
2 9 5 0	17 Maij	28 Maij	1 3	27	29 Nou.	e	10 A	13 A	35
2 9 5 1	6 Iunij	17 Iunij	1 4	24	28 Nou.	d	30 M	5 A	7
2 9 5 2	21 Maij	1 Iunij	1 5	27	3 Dec.	ç b	18 A	24 A	42
2 9 5 3	13 Maij	24 Maij	1	28	2 Dec.	A	7 A	9 A	35
2 9 5 4	2 Iunij	13 Iunij	2	25	1 Dec.	g	27 M	1 A	7
2 9 5 5	18 Maij	29 Maij	3	27	30 Nou.	f	15 A	21 A	42
2 9 5 6	6 Iunij	17 Iunij	4	24	28 Nou.	e d	4 A	5 A	7
2 9 5 7	29 Maij	9 Iunij	5	25	27 Nou.	c	24 M	28 M	7
2	21	2	6	27	3	b	12 A	17 A	35

A . D .	Pente cost	Corp us	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
9 5 8	Maij	Iunij			Dec.				
2 9 5 9	3 Iunij	14 Iunij	7	25	2 Dec.	A	1 A	2 A	7
2 9 6 0	25 Maij	5 Iunij	8	26	30 Nou.	g f	21 M	24 M	7
2 9 6 1	17 Maij	28 Maij	9	27	29 Nou.	e	9 A	13 A	35
2 9 6 2	6 Iunij	17 Iunij	1 0	24	28 Nou.	d	29 M	5 A	7
2 9 6 3	22 Maij	2 Iunij	1 1	26	27 Nou.	c	17 A	18 A	35
2 9 6 4	10 Iunij	21 Iunij	1 2	24	2 Dec.	b A	5 A	9 A	7
2 9 6 5	2 Iunij	13 Iunij	1 3	25	1 Dec.	g	25 M	1 A	7
2 9	18 Maij	29 Maij	1 4	27	30 Nou.	f	13 A	14 A	35

A . D .	Pente cost	Corpus	Ind .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Diff.
66									
2967	7 Iunij	18 Iunij	15	24	29 Nou.	e	2 A	6 A	7
2967	29 Maij	9 Iunij	1	25	27 Nou.	d c	22 M	28 M	7
2968	14 Maij	25 Maij	2	28	3 Dec.	b	10 A	17 A	42
2969	3 Iunij	14 Iunij	3	25	2 Dec.	A	30 M	2 A	7
2969	26 Maij	6 Iunij	4	26	1 Dec.	g	18 A	22 A	35
2969	10 Maij	21 Maij	5	28	29 Nou.	f e	7 A	13 A	42
2969	30 Maij	10 Iunij	6	25	28 Nou.	d	27 M	29 M	7
2969	22 Maij	2 Iunij	7	26	27 Nou.	c	15 A	18 A	35

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
4									
2 9 7 5	11 Iunij	22 Iunij	8 24		3 Dec.	b	4 A	10 A	7
2 9 7 6	26 Maij	6 Iunij	9 26		1 Dec.	A g	24 M	25 M	7
2 9 7 7	18 Maij	29 Maij	1 27 0		30 Nou.	f	12 A	14 A	35
2 9 7 8	7 Iunij	18 Iunij	1 24 1		29 Nou.	e	1 A	6 A	7
2 9 7 9	23 Maij	3 Iunij	1 26 2		28 Nou.	d	21 M	22 M	7
2 9 8 0	14 Maij	25 Maij	1 28 3		3 Dec.	c b	9 A	10 A	35
2 9 8 1	3 Iunij	14 Iunij	1 25 4		2 Dec.	A	29 M	2 A	7
2 9 8 2	26 Maij	6 Iunij	1 26 5		1 Dec.	g	17 A	22 A	35

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
2 9 8 3	8 Iunij	19 Iunij	1	24	30 Nou.	f	5 A	7 A	7
2 9 8 4	30 Maij	10 Iunij	2	25	28 Nou.	e d	25 M	29 M	7
2 9 8 5	22 Maij	2 Iunij	3	26	27 Nou.	c	13 A	18 A	35
2 9 8 6	4 Iunij	15 Iunij	4	25	3 Dec.	b	2 A	3 A	7
2 9 8 7	27 Maij	7 Iunij	5	26	2 Dec.	A	22 M	26 M	7
2 9 8 8	18 Maij	29 Maij	6	27	30 Nou.	g f	10 A	14 A	35
2 9 8 9	7 Iunij	18 Iunij	7	24	29 Nou.	e	30 M	6 A	7
2 9 9 0	23 Maij	3 Iunij	8	26	28 Nou.	d	18 A	19 A	35
2	15	26	9	27	27	c	7 A	11 A	35

A . D .	Pente cost	Corp us	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
9 9 1	Maij	Maij			Nou.				
2 9 9 2	3 Iunij	14 Iunij	1 0	25	2 Dec.	b A	27 M	2 A	7
2 9 9 3	19 Maij	30 Maij	1 1	27	1 Dec.	g	15 A	22 A	42
2 9 9 4	8 Iunij	19 Iunij	1 2	24	30 Nou.	f	4 A	7 A	7
2 9 9 5	31 Maij	11 Iunij	1 3	25	29 Nou.	e	24 M	30 M	7
2 9 9 6	15 Maij	26 Maij	1 4	27	27 Nou.	d c	12 A	18 A	42
2 9 9 7	4 Iunij	15 Iunij	1 5	25	3 Dec.	b	1 A	3 A	7
2 9 9 8	27 Maij	7 Iunij	1	26	2 Dec.	A	21 M	26 M	7
2 9	12 Iunij	23 Iunij	2	28	1 Dec.	g	9 A	15 A	42

A			I						
.			n						
D	Pente	Corp	d	Sun. p.	Adv	Dom. let.	Luna 14	Easter	Di
.	cost	us	.	Pent.	ent I	(vet.)	(vet.)	(vet.)	ff.
9									
9									

Tabula Festorum — Gregorian leaf (Calendarium Gregorianum), A.D. 3000–3055

Columns: A.D. | Golden number (Aur. Num.) | Epact (Epactæ) | Dominical letter(s), Greg. (Lit. Dñicales Calend. Greg.) | Mean full moon, Greg. — day · hour · month (Plenilunia media Cal. Gregor.) | Luna 14, Greg. (Lunæ xiiij Calendarij Gregoriani) | Septuagesima | Ash Wednesday (Dies Cinerum) | Easter, new cal. (Pascha Calend. noui) | Ascension (Ascensio Domini)

Note: 3000 is a Gregorian common year (single dominical letter *e*); on the old-calendar leaf below it is a Julian leap year (two letters). The hour (H) sub-column of the mean full moon is at the limit of what the scan resolves; the H digits below are the best reading the leaf allows.

A									
.	G	Ep			Lu		Ash		Asce
D	ol	ac	Dom.	Mean ☾	na		We	Easter	nsio
.	d.	t	let.	(D·H·mo)	14	Septuagesima	d.	(new)	n
3	1	ij	e	11 · 21 · A	11	9 Feb	26	13 A	22
0	8				A		Feb		Maij
0									
0									
3	1	xii	d	31 · 5 · M	31	1 Feb	18	5 A	14
0	9	j			M		Feb		Maij
0									
1									
3	1	xx	c	19 · 3 · A	18	21 Feb	10	25 A	3
0		v			A		Mar		Iunij
0									
2									
3	2	vj	b	8 · 12 · A	7 A	6 Feb	23	10 A	19
0							Feb		Maij

A									
.	G	Ep			Lu		Ash		Asce
D	ol	ac	Dom.	Mean	na		We	Easter	nsio
.	d.	t	let.	(D·H·mo)	14	Septuagesima	d.	(new)	n
3	1	xii	b A	30 · 22 · M	31	30 Ian	16	2 A	11
0	9	j			M		Feb		Maij
2									
0									
3	1	xx	g	18 · 20 · A	18	18 Feb	7	22 A	31
0		v			A		Mar		Maij
2									
1									
3	2	vj	f	8 · 4 · A	7 A	10 Feb	27	14 A	23
0							Feb		Maij
2									
2									
3	3	xv	e	28 · 13 · M	27	26 Ian	12	30 M	8
0		ij			M		Feb		Maij
2									
3									
3	4	xx	d c	15 · 11 · A	15	15 Feb	3	18 A	27
0		vii			A		Mar		Maij
2		j							
4									
3	5	ix	b	4 · 19 · A	4 A	6 Feb	23	10 A	19
0							Feb		Maij
2									
5									
3	6	xx	A	25 · 4 · M	24	22 Ian	8	26 M	4
0					M		Feb		Maij
2									
6									
3	7	j	g	13 · 2 · A	12	11 Feb	28	15 A	24
0					A		Feb		Maij
2									
7									
3	8	xij	f e	1 · 11 · A	1 A	2 Feb	20	6 A	15

A	G	Ep	Dom.	Mean ☾	Lu		Ash	Easter	Asce
D	ol	ac	let.	(D·H·mo)	na	Septuagesima	We	(new)	nsio
.	d.	t			14		d.		n
0							Feb		Maij
2									
8									
3	9	xx	d	21 · 19 · M	21	18 Ian	4	22 M	30
0		ij			M		Feb		Apr.
2									
9									
3	1	iiij	c	9 · 17 · A	9 A	7 Feb	24	11 A	20
0	0						Feb		Maij
3									
0									
3	1	xv	b	30 · 2 · M	29	30 Ian	16	3 A	12
0	1				M		Feb		Maij
3									
1									
3	1	xx	A g	16 · 23 · A	17	19 Feb	7	22 A	31
0	2	vj			A		Mar		Maij
3									
2									
3	1	vij	f	6 · 8 · A	6 A	3 Feb	20	7 A	16
0	3						Feb		Maij
3									
3									
3	1	xv	e	26 · 17 · M	26	26 Ian	12	30 M	8
0	4	ij			M		Feb		Maij
3									
4									
3	1	xx	d	14 · 15 · A	14	15 Feb	4	19 A	28
0	5	ix			A		Mar		Maij
3									
5									
3	1	x	c b	2 · 23 · A	3 A	6 Feb	23	10 A	19
0	6						Feb		Maij

A	G	Ep			Lu		Ash		Asce
D	ol	ac	Dom.	Mean	na		We	Easter	nsio
.	d.	t	let.	℄ (D·H·mo)	14	Septuagesima	d.	(new)	n
3053	14	xviiij	b	26 · 10 · M	26 M	23 Ian	9 Feb	27 M	5 Maij
3054	15	xxix	A	14 · 7 · A	14 A	12 Feb	1 Mar	16 A	25 Maij
3055	16	x	g	3 · 16 · A	3 A	4 Feb	21 Feb	8 A	17 Maij

Columns as in the first leaf above. Here 3000 is a Julian leap year (two dominical letters f e).

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
2									
3 0 0 3	29 Maij	9 Iunij	6	25	27 Nou.	b	25 M	27 M	7
3 0 0 4	20 Maij	31 Maij	7	27	2 Dec.	A g	13 A	15 A	35
3 0 0 5	9 Iunij	10 Iunij	8	24	1 Dec.	f	2 A	7 A	7
3 0 0 6	25 Maij	5 Iunij	9	26	30 Nou.	e	22 M	23 M	7
3 0 0 7	17 Maij	28 Maij	1 0	27	29 Nou.	d	10 A	12 A	35
3 0 0 8	5 Iunij	16 Iunij	1 1	24	27 Nou.	ç b	30 M	3 A	7
3 0 0 9	21 Maij	1 Iunij	1 2	27	3 Dec.	A	18 A	23 A	42
3 0 1 0	13 Maij	24 Maij	1 3	28	2 Dec.	g	7 A	8 A	35

A . D .	Pente cost	Corp us	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
3 0 1 1	2 Iunij	13 Iunij	1 4	25	1 Dec.	f	27 M	31 M	7
3 0 1 2	24 Maij	4 Iunij	1 5	26	29 Nou.	e d	15 A	19 A	35
3 0 1 3	6 Iunij	17 Iunij	1	24	28 Nou.	c	4 A	11 A	14
3 0 1 4	29 Maij	9 Iunij	2	25	27 Nou.	b	24 M	27 M	7
3 0 1 5	21 Maij	1 Iunij	3	27	3 Dec.	A	12 A	16 A	35
3 0 1 6	9 Iunij	20 Iunij	4	24	1 Dec.	g f	1 A	7 A	7
3 0 1 7	25 Maij	5 Iunij	5	26	30 Nou.	e	21 M	23 M	7
3 0 1 8	17 Maij	28 Maij	6	27	29 Nou.	d	9 A	12 A	35
3	6	17	7	24	28	c	29 M	4 A	7

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
0 1 9	Iunij	Iunij			Nou.				
3 0 2 0	21 Maij	1 Iunij	8	27	3 Dec.	b A	17 A	23 A	42
3 0 2 1	10 Iunij	21 Iunij	9	24	2 Dec.	g	5 A	8 A	7
3 0 2 2	2 Iunij	13 Iunij	1 0	25	1 Dec.	f	25 M	31 M	7
3 0 2 3	18 Maij	29 Maij	1 1	27	30 Nou.	e	13 A	20 A	42
3 0 2 4	6 Iunij	17 Iunij	1 2	24	28 Nou.	d c	2 A	4 A	7
3 0 2 5	29 Maij	9 Iunij	1 3	25	27 Nou.	b	22 M	27 M	7
3 0 2 6	14 Maij	25 Maij	1 4	28	3 Dec.	A	10 A	16 A	42
3 0	3 Iunij	14 Iunij	1 5	25	2 Dec.	g	30 M	1 A	7

A . D .	Pente cost	Corpus	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
5									
3 0 3 6	29 Maij	9 Iunij	9	25	27 Nou.	c b	21 M	27 M	7
3 0 3 7	14 Maij	25 Maij	1 0	28	3 Dec.	A	9 A	16 A	42
3 0 3 8	3 Iunij	14 Iunij	1 1	25	2 Dec.	g	29 M	1 A	7
3 0 3 9	26 Maij	6 Iunij	1 2	26	1 Dec.	f	17 A	21 A	35
3 0 4 0	7 Iunij	18 Iunij	1 3	24	29 Nou.	e d	5 A	12 A	14
3 0 4 1	30 Maij	10 Iunij	1 4	25	28 Nou.	c	25 M	28 M	7
3 0 4 2	22 Maij	2 Iunij	1 5	26	27 Nou.	b	13 A	17 A	35
3 0 4 3	4 Iunij	15 Iunij	1	25	3 Dec.	A	2 A	9 A	14

A . D .	Pente cost	Corpus	Ind .	Sun. p. Pent.	Advent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Diff.
3044	26 Maij	6 Iunij	2	26	1 Dec.	g f	22 M	24 M	7
3045	18 Maij	29 Maij	3	27	30 Nou.	e	10 A	13 A	35
3046	7 Iunij	18 Iunij	4	24	29 Nou.	d	30 M	5 A	7
3047	23 Maij	3 Iunij	5	26	28 Nou.	c	18 A	25 A	42
3048	14 Maij	25 Maij	6	28	3 Dec.	b A	7 A	9 A	35
3049	3 Iunij	14 Iunij	7	25	2 Dec.	g	27 M	1 A	7
3050	19 Maij	30 Maij	8	27	1 Dec.	f	15 A	21 A	42
3051	8 Iunij	19 Iunij	9	24	30 Nou.	e	4 A	6 A	7
3	30	10	1	25	28	d c	24 M	28 M	7

A . D .	Pente cost	Corp us	I n d .	Sun. p. Pent.	Adv ent I	Dom. let. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
0 5 2	Maij	Iunij	0		Nou.				
3 0 5 3	15 Maij	26 Maij	1 1	27	27 Nou.	b	12 A	17 A	42
3 0 5 4	4 Iunij	15 Iunij	1 2	25	3 Dec.	A	1 A	2 A	7
3 0 5 5	27 Maij	7 Iunij	1 3	26	2 Dec.	g	21 M	25 M	7

Caput XXII — *Tabula Festorum Mobilium Temporaria* (continued)

(Table of the Movable Feasts, for the years 1600–5000; continued from the preceding leaves.)

These three leaves continue the great year-by-year table of the movable feasts. Each opening of the book is a single wide table split across two facing pages: the **left-hand (new-calendar) half** carries the running header **CALEND. GREG. / TABVLA FESTORVM**, and the **right-hand half** carries **CAPVT XXII. / MOBILIVM TEMPORARIA**. The left half gives, for each year A.D., the Gregorian reckoning down to Ascension; the right half continues with Pentecost and the later feasts, the Indiction, Advent, and then the **old-calendar (Julian, veteris)** dominical letter, paschal moon, and Easter, ending with the number of days by which the new-calendar Easter differs from the old-calendar Easter.

A . D . .	Gold. №	Ep act	Dom. lett.	Full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Ascensi on
3 0 5 8	19	xiii	c	31 · 7 · M	31 M	31 Ian.	17 Febr .	4 A	13 Maij
3 0 5 9	1	xx v	b	19 · 5 · A	18 A	20 Febr.	9 Mart .	24 A	2 Iunij
3 0 6 0	2	vi	A g	7 · 13 · A	7 A	5 Febr.	22 Febr .	8 A	17 Maij
3 0 6 1	3	xvi i	f	27 · 22 · M	27 M	27 Ian.	13 Febr .	31 M	9 Maij
3 0 6 2	4	xx viii	e	15 · 20 · A	15 A	16 Febr.	5 Mart .	20 A	29 Maij
3 0 6 3	5	ix	d	5 · 5 · A	4 A	1 Febr.	18 Febr .	5 A	14 Maij
3 0 6 4	6	xx	c b	24 · 13 · M	24 M	24 Ian.	10 Febr .	27 M	5 Maij
3 0 6 5	7	i	A	12 · 11 · A	12 A	12 Febr.	1 Mart .	16 A	25 Maij
3	8	xii	g	1 · 20 · A	1 A	4 Febr.	21	8 A	17 Maij

A . D . .	Gold. №	Ep act	Dom. lett.	Full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Ascensi on
0 6 6							Febr .		
3 0 6 7	9	xxi ii	f	22 · 5 · M	21 M	20 Ian.	6 Febr .	24 M	2 Maij
3 0 6 8	10	iiii	e d	9 · 2 · A	9 A	9 Febr.	26 Febr .	12 A	21 Maij
3 0 6 9	11	xv	c	29 · 11 · M	29 M	31 Ian.	17 Febr .	4 A	13 Maij
3 0 7 0	12	xx vi	b	17 · 8 · A	17 A	20 Febr.	9 Mart .	24 A	2 Iunij
3 0 7 1	13	vii	A	6 · 17 · A	6 A	5 Febr.	22 Febr .	9 A	18 Maij
3 0 7 2	14	xvi ii	g f	26 · 2 · M	26 M	28 Ian.	14 Febr .	31 M	9 Maij
3 0 7 3	15	xxi x	e	14 · 0 · A	14 A	16 Febr.	5 Mart .	20 A	29 Maij
3 0	16	x	d	3 · 8 · A	3 A	1 Febr.	18 Febr	5 A	14 Maij

A . D . .	Gold. №	Ep act	Dom. lett.	Full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Ascensi on
7 4							.		
3 0 7 5	17	xxi	c	23 · 17 · M	23 M	24 Ian.	10 Febr	28 M	6 Maij
3 0 7 6	18	ij	b A	10 · 15 · A	11 A	13 Febr.	1 Mart	16 A	25 Maij
3 0 7 7	19	xiii	g	31 · 0 · M	31 M	28 Ian.	14 Febr	1 A	10 Maij
3 0 7 8	1	xx v	f	18 · 21 · A	18 A	17 Febr.	6 Mart	21 A	30 Maij
3 0 7 9	2	vi	e	8 · 6 · A	7 A	9 Febr.	26 Febr	13 A	22 Maij
3 0 8 0	3	xvi i	d c	27 · 15 · M	27 M	25 Ian.	11 Febr	28 M	6 Maij
3 0 8 1	4	xx viii	b	15 · 12 · A	15 A	13 Febr.	2 Mart	17 A	26 Maij
3 0 8	5	ix	A	4 · 21 · A	4 A	5 Febr.	22 Febr	9 A	18 Maij

A D .	Gold. №	Ep act	Dom. lett.	Full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Ascensi on
2									
3 0 8 3	6	xx	g	25 · 6 · M	24 M	21 Ian.	7 Febr .	25 M	3 Maij
3 0 8 4	7	i	f e	12 · 3 · A	12 A	10 Febr.	27 Febr .	13 A	22 Maij
3 0 8 5	8	xii	d	1 · 12 · A	1 A	1 Febr.	18 Febr .	5 A	14 Maij
3 0 8 6	9	xxi ii	c	21 · 21 · M	21 M	24 Ian.	10 Febr .	28 M	6 Maij
3 0 8 7	10	iiii	b	9 · 19 · A	9 A	6 Febr.	23 Febr .	10 A	19 Maij
3 0 8 8	11	xv	A g	29 · 3 · M	29 M	29 Ian.	15 Febr .	1 A	10 Maij
3 0 8 9	12	xx vi	f	17 · 1 · A	17 A	17 Febr.	6 Mart .	21 A	30 Maij
3 0 9 0	13	vii	e	6 · 10 · A	6 A	9 Febr.	26 Febr .	13 A	22 Maij

A . D . .	Gold. №	Ep act	Dom. lett.	Full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Ascensi on
3 0 9 1	14	xvi ii	d	26 · 19 · M	26 M	25 Ian.	11 Febr .	29 M	7 Maij
3 0 9 2	15	xxi x	c b	13 · 16 · A	14 A	14 Febr.	2 Mart .	17 A	26 Maij
3 0 9 3	16	x	A	3 · 1 · A	3 A	5 Febr.	22 Febr .	9 A	18 Maij
3 0 9 4	17	xxi	g	23 · 10 · M	23 M	21 Ian.	7 Febr .	25 M	3 Maij
3 0 9 5	18	ii	f	11 · 7 · A	11 A	10 Febr.	27 Febr .	14 A	23 Maii
3 0 9 6	19	xiii	e d	30 · 16 · M	31 M	2 Febr.	19 Febr .	5 A	14 Maij
3 0 9 7	1	xx v	c	18 · 14 · A	18 A	21 Febr.	10 Mart .	25 A	3 Iuniij
3 0 9 8	2	vi	b	7 · 22 · A	7 A	6 Febr.	23 Febr .	10 A	19 Maij
3	3	xvi	A	28 · 7 · M	27	29 Ian.	15	2 A	11 Maij

A . D . .	Gold. №	Ep act	Dom. lett.	Full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed.	Ea ste r	Ascensi on
0 9 9		i			M		Febr .		
3 1 0 0	4	xx vii	g	17 · 5 · A	16 A	18 Febr.	7 Mart .	22 A	31 Maij
3 1 0 1	5	viii	f	5 · 14 · A	5 A	3 Febr.	20 Febr .	7 A	16 Maij
3 1 0 2	6	xix	e	25 · 22 · M	25 M	26 Ian.	12 Febr .	30 M	8 Maij
3 1 0 3	7	*	d	13 · 20 · A	13 A	15 Febr.	4 Mart .	19 A	28 Maij
3 1 0 4	8	xi	c b	2 · 5 · A	2 A	31 Ian.	17 Febr .	3 A	12 Maij
3 1 0 5	9	xxi i	A	22 · 14 · M	22 M	22 Ian.	8 Febr .	26 M	4 Maij
3 1 0 6	10	iii	g	10 · 11 · A	10 A	11 Febr.	28 Febr .	15 A	24 Maij
3 1	11	xiii i	f	30 · 20 · M	30 M	27 Ian.	13 Febr	31 M	9 Maij

A	Gold.	Ep	Dom.	Full moon	Lun	Septuag	Ash	Ea	Ascensi
D	No	act	lett.	(d·h·mo)	a 14	esima	Wed.	ste	on
0							.		
7									
3	12	25	e d	17 · 18 · A	17	16 Febr.	4	19	28 Maij
1					A		Mart	A	
0							.		
8									
3	13	vi	c	7 · 2 · A	7 A	7 Febr.	24	11	20 Maij
1							Febr	A	
0							.		
9									
3	14	xvi	b	27 · 11 · M	27	30 Ian.	16	3 A	12 Maij
1		i			M		Febr		
1							.		
0									
3	15	xx	A	15 · 9 · A	15	12 Febr.	1	16	15 Maij
1		viii			A		Mart	A	[?]
1							.		
1									

Folio 433 (right half) — A.D. 3056–3111

Column heads (verbatim): **Anni Domini · Pentecoste · Corpus Domini · Indictio · Dñicæ post Pentecosten · Dominica prima Aduentus · Literæ Dñicales Calendarij veteris · Lunæ xiiij. Calendarij veteris · Pascha Caléndarij veteris · Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt.**

A . D .	Pentecos- t	Corpus Christi	In dic- t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
3 18 0 Maij 5 6		29 Maij	14	27	30 Nou.	f e	9 A	13 A	3 5

A . Pent D ecos . t	Corpus Christi	In dic t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
3 31 0 Maij 5 7	11 Iunij	15	25	29 Nou.	d	29 M	5 A	1 4
3 23 0 Maij 5 8	3 Iunij	1	26	28 Nou.	c	17 A	18 A	3 5
3 12 0 Iuni 5 j 9	23 Iunij	2	23	27 Nou.	b	5 A	10 A	7
3 27 0 Maij 6 0	7 Iunij	3	26	2 Dec.	A g	25 M	1 A	1 4
3 19 0 Maij 6 1	30 Maij	4	27	1 Dec.	f	13 A	14 A	3 5
3 8 0 Iuni 6 j 2	19 Iunij	5	24	30 Nou.	e	2 A	6 A	7
3 24 0 Maij 6 3	4 Iunij	6	26	29 Nou.	d	22 M	29 M	1 4
3 15 0 Maij 6 4	26 Maij	7	27	27 Nou.	c b	10 A	17 A	4 2
3 4	15 Iunij	8	25	3 Dec.	A	30 M	2 A	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
0 6 5	Iuni j								
3 0 6 6	27 Maij	7 Iunij	9	26	2 Dec.	g	18 A	22 A	3 5
3 0 6 7	12 Maij	23 Maij	10	28	1 Dec.	f	7 A	14 A	4 2
3 0 6 8	31 Maij	11 Iunij	11	25	29 Nou.	e d	27 M	29 M	7
3 0 6 9	23 Maij	3 Iunij	12	26	28 Nou.	c	15 A	18 A	3 5
3 0 7 0	12 Maij	23 Iunij	13	23	27 Nou.	b	4 A	10 A	7
3 0 7 1	28 Maij	8 Iunij	14	26	3 Dec.	A	24 M	26 M	7
3 0 7 2	19 Maij	30 Maij	15	27	1 Dec.	g f	12 A	14 A	3 5
3 0	8 Iuni	19 Iunij	1	24	30 Nou.	e	1 A	6 A	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
7 3	j								
3 0 7 4	24 Maij	4 Iunij	2	26	29 Nou.	d	21 M	22 M	7
3 0 7 5	16 Maij	27 Maij	3	27	28 Nou.	c	9 A	11 A	3 5
3 0 7 6	4 Iuni j	15 Iunij	4	25	3 Dec.	b A	29 M	2 A	7
3 0 7 7	20 Maij	31 Maij	5	27	2 Dec.	g	17 A	22 A	4 2
3 0 7 8	9 Iuni j	20 Iunij	6	24	1 Dec.	f	5 A	7 A	7
3 0 7 9	1 Iuni j	12 Iunij	7	25	30 Nou.	e	25 M	30 M	7
3 0 8 0	16 Maij	27 Maij	8	27	28 Nou.	d c	13 A	18 A	4 2
3 0 8	5 Iuni j	16 Iunij	9	24	27 Nou.	b	2 A	3 A	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
1									
3 0 8 2	28 Maij	8 Iunij	10	26	3 Dec.	A	22 M	26 M	7
3 0 8 3	13 Maii	24 Maij	11	28	2 Dec.	g	10 A	15 A	4 2
3 0 8 4	1 Iuni j	12 Iunij	12	25	30 Nou.	f e	30 M	6 A	1 4
3 0 8 5	24 Maij	4 Iunij	13	26	29 Nou.	d	18 A	19 A	3 5
3 0 8 6	16 Maij	27 Maij	14	27	28 Nou.	c	7 A	11 A	3 5
3 0 8 7	29 Maij	9 Iunij	15	25	27 Nou.	b	27 M	3 A	1 4
3 0 8 8	20 Maij	31 Maij	1	27	2 Dec.	A g	15 A	22 A	4 2
3 0 8 9	9 Iuni j	20 Iunij	2	24	1 Dec.	f	4 A	7 A	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
3 0 9 0	1 Iuni j	12 Iunij	3	25	30 Nou.	e	24 M	30 M	7
3 0 9 1	17 Maij	28 Maij	4	27	29 Nou.	d	12 A	19 A	4 2
3 0 9 2	5 Iuni j	16 Iunij	5	24	27 Nou.	c b	1 A	3 A	7
3 0 9 3	28 Maij	8 Iunij	6	26	3 Dec.	A	21 M	26 M	7
3 0 9 4	13 Maij	24 Maij	7	28	2 Dec.	g	9 A	15 A	4 2
3 0 9 5	2 Iuni j	13 Iunij	8	25	1 Dec.	f	29 M	31 M	7
3 0 9 6	24 Maij	4 Iunij	9	26	29 Nou.	e d	17 A	19 A	3 5
3 0 9 7	13 Iuni j	24 Iunij	10	23	28 Nou.	c	5 A	11 A	7
3	29	9 Iunij	11	25	27 Nou.	b	25 M	27 M	7

A D .	Pent ecos t	Corpus Christi	In dic t.	Sun. aft. Pent.	1st Sun. Advent	Dom. lett. (Jul.)	Luna 14 (Jul.)	Easter (Jul.)	D i ff .
0 9 8	Maij								
3 0 9 9	21 Maij	1 Iunij	12	27	3 Dec.	A	13 A	16 A	3 5
3 1 0 0	10 Iuni j	21 Iunij	13	24	2 Dec.	g f	2 A	7 A	7
3 1 0 1	26 Maij	6 Iunij	14	26	1 Dec.	e	22 M	23 M	7
3 1 0 2	18 Maij	29 Maij	15	27	30 Nou.	d	10 A	12 A	3 5
3 1 0 3	7 Iuni j	18 Iunij	1	24	29 Nou.	c	30 M	4 A	7
3 1 0 4	22 Maij	2 Iunij	2	26	27 Nou.	b A	18 A	23 A	4 2
3 1 0 5	14 Maij	25 Maij	3	28	3 Dec.	g	7 A	8 A	3 5
3 1	3 Iuni	14 Iunij	4	25	2 Dec.	f	27 M	31 M	7

A	Pent	Corpus	In	Sun. aft.	1st Sun.	Dom. lett.	Luna 14	Easter	D
.	D ecos	Christi	dic	Pent.	Advent	(Jul.)	(Jul.)	(Jul.)	i
.	t		t.						ff
0	j								.
6									
3	19	30 Maij	5	27	1 Dec.	e	15 A	20 A	4
1	Maij								2
0									
7									
3	7	18 Iunij	6	24	29 Nou.	d c	4 A	11 A	1
1	Iuni								4
0	j								
8									
3	30	10 Iunij	7	25	28 Nou.	b	24 M	27 M	7
1	Maij								
0									
9									
3	22	2 Iunij	8	26	27 Nou.	A	12 A	16 A	3
1	Maij								5
1									
0									
3	4	15 Iunij	9	25	3 Dec.	g	1 A	8 A	1
1	Iuni								4
1	j								
1									

Folio 434 (new-calendar half, next opening) — A.D. 3112–3167

Column heads as for folio 432 (**CALEND. GREG. / TABVLA FESTORVM**). This is the left half only; the matching right half falls on the following leaf.

A		Ep			Lu		Ash	Ea	Asce
.	Gold.	ac	Dom.	Full moon	na		We	ste	nsio
.	No	t	lett.	(d·h·mo)	14	Septuagesima	d.	r	n
3	16	ix	g f	3 · 18 · A	4 A	4 Febr.	21	7	16

A . D .	Gold. №	Ep ac t	Dom. lett.	Full moon (d·h·mo)	Lu na 14	Septuagesima	Ash We d.	Ea ste r	Asce nsio n
1 1 2							Feb r.	A	Maij
3 1 1 3	17	xx	e	24 · 2 · M	24 M	26 Ian.	12 Feb r.	30 M	8 Maij
3 1 1 4	18	i	d	12 · 0 · A	12 A	15 Febr.	4 Mar t.	19 A	28 Maij
3 1 1 5	19	xii	c	1 · 9 · A	1 A	31 Ian.	17 Feb r.	4 A	13 Maij
3 1 1 6	1	xx iiii	b A	19 · 6 · A	18 A	19 Febr.	8 Mar t.	23 A	1 Iunij
3 1 1 7	2	v	g	8 · 15 · A	8 A	11 Febr.	28 Feb r.	15 A	24 Maij
3 1 1 8	3	xv i	f	29 · 0 · M	28 M	27 Ian.	13 Feb r.	31 M	9 Maij
3 1 1 9	4	xx vii	e	16 · 21 · A	16 A	16 Febr.	5 Mar t.	20 A	29 Maij
3 1	5	vii i	d c	5 · 6 · A	5 A	8 Febr.	25 Feb	11 A	20 Maij

A . D .	Gold. №	Ep ac t	Dom. lett.	Full moon (d·h·mo)	Lu na 14	Septuagesima	Ash We d.	Ea ste r	Asce nsio n
2 0							r.		
3 1 2 1	6	xi x	b	25 · 15 · M	25 M	23 Ian.	9 Feb r.	27 M	5 Maij
3 1 2 2	7	*	A	13 · 13 · A	13 A	12 Febr.	1 Mar t.	16 A	25 Maii
3 1 2 3	8	xi	g	2 · 21 · A	2 A	4 Febr.	21 Feb r.	8 A	17 Maij
3 1 2 4	9	xx ii	f e	22 · 6 · M	22 M	20 Ian.	6 Feb r.	23 M	1 Maij
3 1 2 5	10	iii	d	10 · 4 · A	10 A	8 Febr.	25 Feb r.	12 A	21 Maij
3 1 2 6	11	xii ii	c	30 · 13 · M	30 M	31 Ian.	17 Feb r.	4 A	13 Maij
3 1 2 7	12	25	b	18 · 10 · A	17 A	20 Febr.	9 Mar t.	24 A	2 Iunij
3 1 2	13	vi	A g	6 · 19 · A	7 A	5 Febr.	22 Feb r.	8 A	17 Maij

A . D .	Gold. №	Ep ac t	Dom. lett.	Full moon (d·h·mo)	Lu na 14	Septuagesima	Ash We d.	Ea ste r	Asce nsio n
8									
3 1 2 9	14	xv ii	f	27 · 4 · M	27 M	27 Ian.	13 Feb r.	31 M	9 Maij
3 1 3 0	15	xx vii i	e	15 · 1 · A	15 A	16 Febr.	5 Mar t.	20 A	29 Maij
3 1 3 1	16	ix	d	4 · 10 · A	4 A	1 Febr.	18 Feb r.	5 A	14 Maij
3 1 3 2	17	xx	c b	23 · 19 · M	24 M	24 Ian.	10 Feb r.	27 M	5 Maij
3 1 3 3	18	i	A	11 · 16 · A	12 A	12 Febr.	1 Mar t.	16 A	25 Maij
3 1 3 4	19	xii	g	1 · 1 · A	1 A	4 Febr.	21 Feb r.	8 A	17 Maij
3 1 3 5	1	xx iiii	f	19 · 23 · A	18 A	17 Febr.	6 Mar t.	21 A	30 Maij
3 1 3 6	2	v	e d	8 · 8 · A	8 A	9 Febr.	26 Feb r.	12 A	21 Maij

A . D .	Gold. №	Ep ac t	Dom. lett.	Full moon (d·h·mo)	Lu na 14	Septuagesima	Ash We d.	Ea ste r	Asce nsio n
3 1 3 7	3	xv i	c	28 · 16 · M	28 M	31 Ian.	17 Feb r.	4 A	13 Maij
3 1 3 8	4	xx vii	b	16 · 14 · A	16 A	13 Febr.	2 Mar t.	17 A	26 Maij
3 1 3 9	5	vii i	A	5 · 23 · A	5 A	5 Febr.	22 Feb r.	9 A	18 Maij
3 1 4 0	6	xi x	g f	25 · 8 · M	25 M	28 Ian.	14 Feb r.	31 M	9 Maij
3 1 4 1	7	*	e	13 · 5 · A	13 A	16 Febr.	5 Mar t.	20 A	29 Maij
3 1 4 2	8	xi	d	2 · 14 · A	2 A	1 Febr.	18 Feb r.	5 A	14 Maij
3 1 4 3	9	xx ii	c	22 · 23 · M	22 M	24 Ian.	10 Feb r.	28 M	6 Maij
3 1 4 4	10	iii	b A	9 · 20 · A	10 A	13 Febr.	1 Mar t.	16 A	25 Maij
3	11	xii	g	30 · 5 · M	30	28 Ian.	14	1	10

A . D .	Gold. №	Ep ac t	Dom. lett.	Full moon (d·h·mo)	Lu na 14	Septuagesima	Ash We d.	Ea ste r	Asce nsio n
1 4 5		ii			M		Feb r.	A	Maij
3 1 4 6	12	25	f	18 · 3 · A	17 A	17 Febr.	6 Mar t.	21 A	30 Maij
3 1 4 7	13	vi	e	7 · 11 · A	7 A	9 Febr.	26 Feb r.	13 A	22 Maij
3 1 4 8	14	xv ii	d c	26 · 20 · M	27 M	25 Ian.	11 Feb r.	28 M	6 Maij
3 1 4 9	15	xx vii i	b	14 · 18 · A	15 A	13 Febr.	2 Mar t.	17 A	26 Maij
3 1 5 0	16	ix	A	4 · 3 · A	4 A	5 Febr.	22 Feb r.	9 A	18 Maij
3 1 5 1	17	xx	g	24 · 11 · M	24 M	21 Ian.	7 Feb r.	25 M	3 Maij
3 1 5 2	18	i	f e	11 · 9 · A	12 A	10 Febr.	27 Feb r.	13 A	22 Maij
3 1	19	xii	d	31 · 18 · M	1 A	1 Febr.	18 Feb	5 A	14 Maij

A . D .	Gold. №	Ep ac t	Dom. lett.	Full moon (d·h·mo)	Lu na 14	Septuagesima	Ash We d.	Ea ste r	Asce nsio n
5 3							r.		
3 1 5 4	1	xx iiij	c	19 · 15 · A	18 A	21 Febr.	10 Mar t.	25 A	3 Iunij
3 1 5 5	2	v	b	9 · 0 · A	8 A	6 Febr.	23 Feb r.	10 A	19 Maij
3 1 5 6	3	xv i	A g	28 · 9 · M	28 M	29 Febr. [recte: 29 Ian.]	15 Feb r.	1 A	10 Maij
3 1 5 7	4	xx vii	f	16 · 6 · A	16 A	17 Febr.	6 Mar t.	21 A	30 Maij
3 1 5 8	5	vii i	e	5 · 15 · A	5 A	2 Febr.	19 Feb r.	6 A	15 Maij
3 1 5 9	6	xi x	d	26 · 0 · M	25 M	25 Ian.	11 Feb r.	29 M	7 Maij
3 1 6 0	7	*	c b	12 · 22 · A	13 A	14 Febr.	2 Mar t.	17 A	26 Maij
3 1 6	8	xi	A	2 · 6 · A	2 A	5 Febr.	22 Feb r.	9 A	18 Maij

A									
.	Gold.	Ep	Dom.	Full moon	Lu		Ash	Ea	Asce
.	No	ac	lett.	(d·h·mo)	na	Septuagesima	We	ste	nsio
.		t			14		d.	r	n
1									
3	9	xx	g	22 · 15 · M	22	21 Ian.	7	25	3
1		ii			M		Feb	M	Maij
6							r.		
2									
3	10	iii	f	10 · 13 · A	10	10 Febr.	27	14	23
1					A		Feb	A	Maij
6							r.		
3									
3	11	xii	e d	29 · 22 · M	30	2 Febr.	19	5	14
1		ii			M		Feb	A	Maij
6							r.		
4									
3	12	25	c	17 · 19 · A	17	14 Febr.	3	18	27
1					A		Mar	A	Maij
6							t.		
5									
3	13	vi	b	7 · 4 · A	7 A	6 Febr.	23	10	19
1							Feb	A	Maij
6							r.		
6									
3	14	xv	A	27 · 13 · M	27	29 Ian.	15	2	11
1		ii			M		Feb	A	Maij
6							r.		
7									

Caput XXII — Tabula Festorum Mobilium Temporaria (continued)

The great table of the movable feasts (A.D. 1600–5000), continued. Each opening pairs a New-calendar (Gregorian) leaf with an Old-calendar (veteris) leaf. This span covers A.D. 3112–3223.

Column-header glosses (Old-calendar leaves, pp. 435 & 437): **Anni Domini** = year A.D.; **Pentecoste** = Pentecost; **Corpus Domini** = Corpus Christi; **Indictio** = Indiction; **Dñicæ post Pentecosten** = Sundays after Pentecost; **Dominica prima Adventus** = First Sunday of Advent; **Literæ Dñicales Calend. veteris** = Dominical letter(s), old calendar; **Lunæ xiiij Cal. veteris** = the 14th of the moon (Luna 14), old calendar; **Pascha Calend. veteris** = Easter, old calendar; **Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt** = number of days by which New-calendar Easter differs from Old-calendar Easter. Month/letter sorts kept as printed: Maij, Iunij (also the variants Mai, Maij, Maii), Ian., Feb., Mar./Mart., Dec., Nou.; and, in the moon/Easter columns, **M** = Martius (March), **A** = Aprilis (April).

Column-header glosses (New-calendar leaf, p. 436): **Aur. Num.** = Golden Number; **Epactæ** = Epacts; **Lit. Dñicales Calend. Greg.** = Dominical letter(s), Gregorian calendar; **Plenilunia media Cal. Gregor. (D. H.)** = mean full moons, Gregorian calendar (Day · Hour · month-letter); **Lunæ xiiij. Calendarij Gregoriani** = Luna 14, Gregorian; **Septuagesima**; **Dies Cinerum** = Ash Wednesday; **Pascha Calend. novi** = Easter, new calendar; **Ascensio Domini** = Ascension.

Old-calendar leaf — right half of the A.D. 3112–3167 opening

(The left, Gregorian, half of this opening (folio 434, A.D. 3112–3167) fell in the preceding leaves.)

Running header: **CAPVT XXII. — MOBILIVM TEMPORARIA.**

A									D
.									i
D	Pente	Corpus	Ind	Dñicæ post	Adve	Lit. Dñic.	Luna	Pasch	ff
.	coste	Domini	ict.	Pent.	ntus I	vet.	14 vet.	a vet.	.
3	26	6 Iunij	10	26	1	f e	21 M	23 M	7
1	Maij				Dec.				
1									
2									
3	18	29 Maij	11	27	30	d	9 A	12 A	3
1	Maij				Nou.				5
1									
3									
3	7	18 Iunij	12	24	29	c	29 M	4 A	7
1	Iunij				Nou.				

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
1 4									
3 1 1 5	23 Maij	3 Iunij	13	26	28 Nou.	b	17 A	24 A	4 2
3 1 1 6	11 Iunij	22 Iunij	14	24	3 Dec.	A g	5 A	8 A	7
3 1 1 7	3 Iunij	14 Iunij	15	25	2 Dec.	f	25 M	31 M	7
3 1 1 8	19 Maij	30 Maij	1	27	1 Dec.	e	13 A	20 A	4 2
3 1 1 9	8 Iunij	19 Iunij	2	24	30 Nou.	d	2 A	5 A	7
3 1 2 0	30 Maij	10 Iunij	3	25	28 Nou.	ç b	22 M	27 M	7
3 1 2 1	15 Maij	26 Maij	4	27	27 Nou.	A	10 A	16 A	2 [?
3 1 2 2	4 Iunij	15 Iunij	5	25	3 Dec.	g	30 M	1 A	7

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2									
3 1 2 3	27 Mai	7 Iunij	6	26	2 Dec.	f	18 A	21 A	3 5
3 1 2 4	11 Maij	22 Maij	7	28	30 Nou.	e d	7 A	12 A	4 2
3 1 2 5	31 Maij	11 Iunij	8	25	29 Nou.	ç	27 M	28 M	7
3 1 2 6	23 Maij	3 Iunij	9	26	28 Nou.	b	15 A	17 A	3 5
3 1 2 7	12 Iunij	23 Iunij	10	23	27 Nou.	A	4 A	9 A	7
3 1 2 8	27 Maij	7 Iunij	11	26	2 Dec.	g f	24 M	31 M	1 4
3 1 2 9	19 Maij	30 Maij	12	27	1 Dec.	e	12 A	13 A	3 5
3 1 3 0	8 Iunij	19 Iunij	13	24	30 Nou.	d	1 A	5 A	7

A . D . .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
3 1 3 1	24 Maij	4 Iunij	14	26	29 Nou.	ç	21 M	28 M	1 4
3 1 3 2	15 Maij	26 Maij	15	27	27 Nou.	b A	9 A	16 A	4 2
3 1 3 3	4 Iunij	15 Iunij	1	25	3 Dec.	g	29 M	1 A	7
3 1 3 4	27 Maij	7 Iunij	2	26	2 Dec.	f	17 A	21 A	3 5
3 1 3 5	9 Iunij	20 Iunij	3	24	1 Dec.	e	5 A	6 A	7
3 1 3 6	31 Maij	11 Iunij	4	25	29 Nou.	d ç	25 M	28 M	7
3 1 3 7	23 Maij	3 Iunij	5	26	28 Nou.	b	13 A	17 A	3 5
3 1 3 8	5 Iunij	16 Iunij	6	24	27 Nou.	A	2 A	9 A	1 4
3	28	8 Iunij	7	26	3	g	22 M	25 M	7

A . D . .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
1 3 9	Maij				Dec.				
3 1 4 0	19 Maij	30 Maij	8	27	1 Dec.	f e	10 A	13 A	3 5
3 1 4 1	8 Iunij	19 Iunij	9	24	30 Nou.	d	30 M	5 A	7
3 1 4 2	24 Maij	4 Iunij	10	26	29 Nou.	c	18 A	25 A	4 2
3 1 4 3	16 Maij	27 Maij	11	27	28 Nou.	b	7 A	10 A	3 5
3 1 4 4	4 Iunij	15 Iunij	12	25	3 Dec.	A g	27 M	1 A	7
3 1 4 5	20 Maij	31 Maij	13	27	2 Dec.	f	15 A	21 A	4 2
3 1 4 6	9 Iunij	20 Iunij	14	24	1 Dec.	e	4 A	6 A	7
3 1	1 Iunij	12 Iunij	15	25	30 Nou.	d	24 M	29 M	7

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
47									
3148	16 Maij	27 Maij	1	27	28 Nou.	c b	12 A	17 A	42
3149	5 Iunij	16 Iunij	2	24	27 Nou.	A	1 A	2 A	7
3150	28 Maij	8 Iunij	3	26	3 Dec.	g	21 M	25 M	7
3151	13 Maij	24 Maij	4	28	2 Dec.	f	9 A	14 A	42
3152	1 Iunij	12 Iunij	5	25	30 Nou.	e d	29 M	5 A	14
3153	24 Maij	4 Iunij	6	26	29 Nou.	c	17 A	18 A	35
3154	13 Iunij	24 Iunij	7	23	28 Nou.	b	5 A	10 A	7
3155	29 Maij	9 Iunij	8	25	27 Nou.	A	25 M	26 M	7

A . D . 5 3 1 5 6 3 1 5 7 3 1 5 8 3 1 5 9 3 1 6 0 3 1 6 1 3 1 6 2 3 1 6 3	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
	20 Maij	31 Maij	9	27	2 Dec.	g f	13 A	14 A	3 5
	9 Iunij	20 Iunij	10	24	1 Dec.	e	2 A	6 A	7
	25 Maij	5 Iunij	11	26	30 Nou.	d	22 M	29 M	1 4
	17 Maij	18 Maij [?]	12	27	29 Nou.	c	10 A	11 A	3 5
	5 Iunij	16 Iunij	13	24	27 Nou.	b A	30 M	2 A	7
	28 Maij	8 Iunij	14	26	3 Dec.	g	18 A	22 A	3 5
	13 Maij	24 Maij	15	28	2 Dec.	f	7 A	14 A	4 2
	2 Iunij	13 Iunij	1	25	1 Dec.	e	27 M	30 M	7

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
3 1 6 4	24 Maij	4 Iunij	2	26	29 Nou.	d ç	15 A	18 A	3 5
3 1 6 5	6 Iunij	17 Iunij	3	24	28 Nou.	b	4 A	10 A	1 4
3 1 6 6	29 Maij	9 Iunij	4	25	27 Nou.	A	24 M	26 M	7
3 1 6 7	21 Maij	1 Iunij	5	27	3 Dec.	g	12 A	15 A	3 5

New-calendar (Gregorian) leaf — A.D. 3168–3223

Running header: **CALEND. GREG. — TABVLA FESTORVM MOBILIVM**

A . D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io
3 1 6 8	15	xx vii i	g f	14 · 10 · A	15 A	18 Feb	6 Mar	21 A	30 Mai j
3 1 6 9	16	ix	e	3 · 18 · A	4 A	2 Feb	19 Feb	6 A	15 Mai j
3	17	xx	d	24 · 4 · M	24	25 Ian	11 Feb	29 M	7

A	D	Aur.	E	Lit. Dñic.	Plenilunia (D ·	Lu	Septua	Dies	Pasch	Asc
		Nu	pa	Greg.	H · mo)	na	gesima	Cineru	a novi	ens
		m.	ct			14		m		io
1						M				Mai
7										j
0										
3	18	j	c		12 · 1 · A	12	14 Feb	3 Mar	18 A	27
1						A				Mai
7										j
1										
3	19	xij	b A		31 · 10 · M	1 A	30 Ian	16 Feb	2 A	11
1										Mai
7										j
2										
3	1	xx	g		19 · 8 · A	18	18 Feb	7 Mar	22 A	31
1		iii				A				Mai
7		i								j
3										
3	2	v	f		8 · 17 · A	8 A	10 Feb	27 Feb	14 A	23
1										Mai
7										j
4										
3	3	xv	e		29 · 1 · M	28	26 Ian	12 Feb	30 M	8
1		j				M				Mai
7										j
5										
3	4	xx	d c		15 · 23 · A	16	15 Feb	3 Mar	18 A	27
1		vij				A				Mai
7										j
6										
3	5	vii	b		5 · 8 · A	5 A	6 Feb	23 Feb	10 A	19
1		i								Mai
7										j
7										
3	6	xi	A		25 · 16 · M	25	22 Ian	8 Feb	26 M	4
1		x				M				Mai

A D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io
7 8									j
3 1 7 9	7	*	g	13 · 14 · A	13 A	11 Feb	28 Feb	5 A	24 Mai j
3 1 8 0	8	xj	f e	1 · 23 · A	2 A	3 Feb	20 Feb	6 A	15 Mai j
3 1 8 1	9	xx ij	d	22 · 8 · M	22 M	25 Ian	11 Feb	29 M	7 Mai j
3 1 8 2	10	iii	c	10 · 15 · A	10 A	7 Feb	24 Feb	11 A	20 Mai j
3 1 8 3	11	xii ii	b	30 · 14 · M	30 M	30 Ian	16 Feb	3 A	12 Mai j
3 1 8 4	12	25	A g	17 · 12 · A	17 A	19 Feb	7 Mar	22 A	31 Mai j
3 1 8 5	13	vj	f	6 · 21 · A	7 A	10 Feb	27 Feb	14 A	23 Mai j
3 1 8	14	xv ij	e	27 · 5 · M	27 M	26 Ian	12 Feb	30 M	8 Mai j

A										
. D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io	
6										
3 1 8 7	15	xx vii i	d	15 · 3 · A	15 A	15 Feb	4 Mart	19 A	28 Mai j	
3 1 8 8	16	ix	c b	3 · 12 · A	4 A	7 Feb	24 Feb	10 A	19 Mai j	
3 1 8 9	17	xx	A	23 · 20 · M	24 M	22 Ian	8 Feb	26 M	4 Mai j	
3 1 9 0	18	j	g	11 · 18 · A	12 A	11 Feb	28 Feb	15 A	24 Mai j	
3 1 9 1	19	xij	f	1 · 3 · A	1 A	3 Feb	20 Feb	7 A	16 Mai j	
3 1 9 2	1	xx iii i	e d	19 · 0 · A	18 A	16 Feb	4 Mar	19 A	28 Mai j	
3 1 9 3	2	v	c	8 · 9 · A	8 A	7 Feb	24 Feb	11 A	20 Mai j	
3 1 9 4	3	xv j	b	28 · 18 · M	28 M	30 Ian	16 Feb	3 A	12 Mai j	

A									
. D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io
3 1 9 5	4	xx vij	A	16 · 16 · A	16 A	19 Feb	8 Mar	23 A	1 Jun ij
3 1 9 6	5	vii i	g f	5 · 0 · A	5 A	4 Feb	21 Feb	7 A	16 Mai j
3 1 9 7	6	xi x	e	25 · 9 · M	25 M	26 Ian	12 Feb	30 M	8 Mai j
3 1 9 8	7	*	d	13 · 7 · A	13 A	15 Feb	4 Mar	19 A	28 Mai j
3 1 9 9	8	xj	c	2 · 16 · A	2 A	31 Ian	17 Feb	4 A	13 Mai j
3 2 0 0	9	xx ij	b A	22 · 0 · M	22 M	23 Ian	9 Feb	26 M	4 Mai j
3 2 0 1	10	iiij	g	9 · 22 · A	10 A	11 Feb	28 Feb	15 A	24 Mai j
3 2 0 2	11	xii ii	f	30 · 7 · M	30 M	27 Ian	13 Feb	31 M	9 Mai j
3	12	25	e	18 · 4 · A	17	16 Feb	5 Mar	20 A	29

A D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io
2 0 3					A				Mai j
3 2 0 4	13	vi	d ç	6 · 13 · A	7 A	8 Feb	25 Feb	11 A	20 Mai j
3 2 0 5	14	xv ij	b	26 · 22 · M	27 M	30 Ian	16 Feb	3 A	12 Mai j
3 2 0 6	15	xx vii i	A	14 · 19 · A	15 A	12 Feb	1 Mar	16 A	25 Mai j
3 2 0 7	16	ix	g	4 · 4 · A	4 A	4 Feb	21 Feb	8 A	17 Mai j
3 2 0 8	17	xx	f e	23 · 13 · M	24 M	27 Ian	13 Feb	30 M	8 Mai j
3 2 0 9	18	j	d	11 · 11 · A	12 A	15 Feb	4 Mar	19 A	28 Mai j
3 2 1 0	19	xij	c	31 · 19 · M	1 A	31 Ian	17 Feb	4 A	13 Mai j
3 2	1	xx iii	b	19 · 17 · A	18 A	20 Feb	9 Mar	24 A	2 Iun

A D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io
1 1		i							ij
3 2 1 2	2	v	A g	8 · 3 · A	8 A	12 Feb	29 Feb	15 A	24 Mai j
3 2 1 3	3	xv j	f	28 · 11 · M	28 M	27 Ian	13 Feb	31 M	9 Mai j
3 2 1 4	4	xx vij	e	16 · 8 · A	16 A	16 Feb	5 Mar	20 A	29 Mai j
3 2 1 5	5	vii i	d	5 · 17 · A	5 A	8 Feb	25 Feb	12 A	21 Mai j
3 2 1 6	6	xi x	c b	25 · 2 · M	25 M	24 Ian	10 Feb	27 M	5 Mai j
3 2 1 7	7	*	A	12 · 23 · A	13 A	12 Feb	1 Mar	16 A	25 Mai j
3 2 1 8	8	xj	g	2 · 8 · A	2 A	4 Feb	21 Feb	8 A	17 Mai j
3 2 1	9	xx ij	f	22 · 17 · M	22 M	20 Ian	6 Feb	24 M	2 Mai j

A									
. D .	Aur. Nu m.	E pa ct	Lit. Dñic. Greg.	Plenilunia (D · H · mo)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a novi	Asc ens io
9									
3 2 2 0	10	iiij	e d	9 · 14 · A	10 A	9 Feb	26 Feb	12 A	21 Mai j
3 2 2 1	11	xii ii	c	29 · 23 · M	30 M	31 Ian	17 Feb	4 A	13 Mai j
3 2 2 2	12	25	b	17 · 21 · A	17 A	20 Feb	9 Mar	24 A	2 Iun ij
3 2 2 3	13	vi	A	7 · 6 · A	7 A	5 Feb	22 Feb	9 A	18 Mai j

Old-calendar (*veteris*) leaf — A.D. 3168–3223

Running header: **CAPVT XXII. — MOBILIVM TEMPORARIA.**

A									D i ff
. D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	.
3 1 6 8	9 Iunij	20 Iunij	6	24	1 Dec.	f e	1 A	6 A	7
3 1 6 9	25 Maij	5 Iunij	7	26	30 Nou.	d	21 M	22 M	7

A . D . .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
3 1 7 0	17 Maij	28 Maij	8	27	29 Nou.	c	9 A	11 A	3 5
3 1 7 1	6 Iunij	17 Iunij	9	24	28 Nou.	b	29 M	3 A	7
3 1 7 2	21 Maij	1 Iunij	10	27	3 Dec.	A g	17 A	22 A	4 2
3 1 7 3	10 Iunij	21 Iunij	11	24	2 Dec.	f	5 A	7 A	7
3 1 7 4	2 Iunij	13 Iunij	12	25	1 Dec.	e	25 M	30 M	7
3 1 7 5	18 Maij	29 Maij	13	27	30 Nou.	d	13 A	19 A	4 2
3 1 7 6	6 Iunij	17 Iunij	14	24	28 Nou.	c b	2 A	3 A	7
3 1 7 7	29 Maij	9 Iunij	15	25	27 Nou.	A	22 M	26 M	7
3	14	25 Maij	1	28	3	g	10 A	15 A	4

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
1 7 8	Maij				Dec.				2
3 1 7 9	3 Iunij	14 Iunij	2	25	2 Dec.	f	30 M	31 M	7
3 1 8 0	25 Maij	5 Iunij	3	26	30 Nou.	e d	18 A	19 A	3 5
3 1 8 1	17 Maij	28 Maij	4	27	29 Nou.	c	7 A	11 A	3 5
3 1 8 2	30 Maij	10 Iunij	5	25	28 Nou.	b	27 M	3 A	1 4
3 1 8 3	22 Maij	2 Iunij	6	26	27 Nou.	A	15 A	16 A	3 5
3 1 8 4	10 Iunij	21 Iunij	7	24	2 Dec.	g f	4 A	7 A	7
3 1 8 5	2 Iunij	13 Iunij	8	25	1 Dec.	e	24 M	30 M	7
3 1	18 Maij	29 Maij	9	27	30 Nou.	d	12 A	19 A	4 2

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
8 6									
3 1 8 7	7 Iunij	18 Iunij	10	24	29 Nou.	c	1 A	4 A	7
3 1 8 8	29 Maij	9 Iunij	11	25	27 Nou.	b A	21 M	26 M	7
3 1 8 9	14 Maij	25 Maij	12	28	3 Dec.	g	9 A	15 A	4 2
3 1 9 0	3 Iunij	14 Iunij	13	25	2 Dec.	f	29 M	31 M	7
3 1 9 1	26 Mai	6 Iunij	14	26	1 Dec.	e	17 A	20 A	3 5
3 1 9 2	7 Iunij	18 Iunij	15	24	29 Nou.	d c	5 A	11 A	1 4
3 1 9 3	30 Maij	10 Iunij	1	25	28 Nou.	b	25 M	27 M	7
3 1 9	22 Maij	2 Iunij	2	26	27 Nou.	A	13 A	16 A	3 5

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
4									
3 11 1 Iunij 9 5	22 Iunij	3	24		3 Dec.	g	2 A	8 A	7
3 26 1 Maii 9 6	6 Iunij	4	26		1 Dec.	f e	22 M	23 M	7
3 18 1 Maij 9 7	29 Maij	5	27		30 Nou.	d	10 A	12 A	3 5
3 7 1 Iunij 9 8	18 Iunij	6	24		29 Nou.	c	30 M	4 A	7
3 23 1 Maij 9 9	3 Iunij	7	26		28 Nou.	b	18 A	24 A	4 2
3 14 2 Maij 0 0	25 Maij	8	28		3 Dec.	A g	7 A	8 A	3 5
3 3 2 Iunij 0 1	14 Iunij	9	25		2 Dec.	f	27 M	31 M	7
3 19 2 Maij 0 2	30 Maij	10	27		1 Dec.	e	15 A	20 A	4 2

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
3 2 0 3	8 Iunij	19 Iunij	11	24	30 Nou.	d	4 A	5 A	7
3 2 0 4	30 Maij	10 Iunij	12	25	28 Nou.	c b	24 M	27 M	7
3 2 0 5	22 Maij	2 Iunij	13	26	27 Nou.	A	12 A	16 A	3 5
3 2 0 6	4 Iunij	15 Iunij	14	25	3 Dec.	g	1 A	8 A	1 4
3 2 0 7	27 Maij	7 Iunij	15	26	2 Dec.	f	21 M	24 M	7
3 2 0 8	18 Maij	29 Maij	1	27	30 Nou.	e d	9 A	12 A	3 5
3 2 0 9	7 Iunij	18 Iunij	2	24	29 Nou.	c	29 M	4 A	7
3 2 1 0	23 Maij	3 Iunij	3	26	28 Nou.	b	17 A	24 A	4 2
3	12	23 Iunij	4	23	27	A	5 A	9 A	7

A . D .	Pente coste	Corpus Domini	Ind ict.	Dñicæ post Pent.	Adve ntus I	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
2 1 1	Iunij				Nou.				
3 2 1 2	3 Iunij	14 Iunij	5	25	2 Dec.	g f	25 M	31 M	7
3 2 1 3	19 Maij	30 Maij	6	27	1 Dec.	e	13 A	20 A	4 2
3 2 1 4	8 Iunij	19 Iunij	7	24	30 Nou.	d	2 A	5 A	7
3 2 1 5	31 Maij	11 Iunij	8	25	29 Nou.	c	22 M	28 M	7
3 2 1 6	15 Maij	26 Maij	9	27	27 Nou.	b A	10 A	16 A	4 2
3 2 1 7	4 Iunij	15 Iunij	10	25	3 Dec.	g	30 M	1 A	7
3 2 1 8	27 Maij	7 Iunij	11	26	2 Dec.	f	18 A	21 A	3 5
3 2	12 Maij	23 Maij	12	28	1 Dec.	e	7 A	13 A	4 2

A									D
.									i
D	Pente	Corpus	Ind	Dñicæ post	Adve	Lit. Dñic.	Luna	Pasch	ff
.	coste	Domini	ict.	Pent.	ntus I	vet.	14 vet.	a vet.	.
1									
9									
3	31	11 Iunij	13	25	29	d c	27 M	28 M	7
2	Maij				Nou.				
2									
0									
3	23	3 Iunij	14	26	28	b	15 A	17 A	3
2	Maij				Nou.				5
2									
1									
3	12	23 Iunij	15	23	27	A	4 A	9 A	7
2	Iunij				Nou.				
2									
2									
3	28	8 Iunij	1	26	3	g	24 M	25 M	7
2	Maij				Dec.				
2									
3									

Caput XXII — Tabula Festorum Mobilium Temporaria (continued)

Temporary Table of the Movable Feasts (A.D. 1600–5000), continuing the paired new-calendar (Gregorian) and old-calendar (*veteris*) leaves.

This opening presents the table for A.D. 3224–3279 across two facing pages: the first page carries the new-calendar (Gregorian) columns, and the second the remaining Gregorian feast columns together with the old-calendar (Julian) block. The following page begins the next opening with the new-calendar columns for A.D. 3280–3335.

Conventions used in the transcription below (as printed): in the paschal columns **M** = *Martii* (March) and **A** = *Aprilis* (April); the mean-full-moon column is set *day · hour · month*, so e.g. 26. 14 M = day 26, hour 14, March. Feast months otherwise

given as **Ian.** (January), **Febr.** (February), **Mart.** (March), **Maij/Maii** (May), **Iunij** (June), **Nou.** (November), **Dec.** (December). Golden number = *Aureus Numerus*; epact-30 is printed as the asterisk *. The dominical-letter columns carry two letters in leap years. Roman/Arabic numeral forms and i-/j-terminal letter sorts are preserved exactly as printed.

New-calendar (Gregorian) leaf — A.D. 3224–3279

Column heads (as printed): *Anni Domini* | *Aur. Num.* (golden number) | *Epactæ* | *Literæ Dominicales Caléd. Gregor.* | *Plenilunia media Cal. Gregor.* (D. H. + month) | *Lunæ xiiii Calendarii Gregoriani* | *Septuagesima* | *Dies Cinerum* (Ash Wednesday) | *Pascha Calend. novi* (Easter) | *Ascensio Domini*.

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3224	14	xvi i	g f	26. 14 M	27 M	28 Ian.	14 Febr.	31 M	9 Mai j
3225	15	xx viii	e	14. 12 A	15 A	16 Febr.	5 Mart.	20 A	29 Mai j
3226	16	ix	d	3. 21 A	4 A	1 Febr.	18 Febr.	5 A	14 Mai j
3227	17	xx	c	24. 6 M	24 M	24 Ian.	10 Febr.	28 M	6 Mai j
3228	18	i	b A	11. 3 A	12 A	13 Febr.	1 Mart.	16 A	25 Mai j
3229	19	xii	g	31. 12 M	1 A	4 Febr.	21 Febr.	8 A	17 Mai j
3230	1	xxi iii	f	19. 9 A	18 A	17 Febr.	6 Mart.	21 A	30 Mai j
3231	2	v	e	8. 18 A	8 A	9 Febr.	26	13 A	22

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
							Febr.		Mai j
3232	3	xvi	d c	28. 3 M	28 M	1 Febr.	18 Febr.	4 A	13 Mai j
3233	4	xx vii	b	16. 1 A	16 A	13 Febr.	2 Mart.	17 A	26 Mai j
3234	5	viii	A	5. 9 A	5 A	5 Febr.	22 Febr.	9 A	18 Mai j
3235	6	xix	g	25. 18 M	25 M	28 Ian.	14 Febr.	1 A	16 Mai j
3236	7	*	f e	12. 16 A	13 A	17 Febr.	5 Mart.	20 A	29 Mai j
3237	8	xi	d	2. 1 A	2 A	1 Febr.	18 Febr.	5 A	14 Mai j
3238	9	xxi i	c	22. 9 M	22 M	24 Ian.	10 Febr.	28 M	6 Mai j
3239	10	iii	b	10. 7 A	10 A	13 Febr.	2 Mart.	17 A	26 Mai j
3240	11	xiii i	A g	29. 16 M	30 M	29 Ian.	15 Febr.	1 A	10 Mai j
3241	12	25	f	17. 13 A	17 A	17 Febr.	6 Mart.	21 A	30 Mai j
3242	13	vi	e	6. 22 A	7 A	9 Febr.	26	13 A	22

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
							Febr.		Mai j
3243	14	xvi i	d	27. 7 M	27 M	25 Ian.	11 Febr.	29 M	7 Mai j
3244	15	xx viii	c b	14. 4 A	15 A	14 Febr.	2 Mart.	17 A	26 Mai j
3245	16	ix	A	3. 13 A	4 A	5 Febr.	22 Febr.	9 A	18 Mai j
3246	17	xx	g	23. 22 M	24 M	21 Ian.	7 Febr.	25 M	3 Mai j
3247	18	i	f	11. 20 A	12 A	10 Febr.	27 Febr.	14 A	23 Mai j
3248	19	xii	e d	31. 4 M	1 A	2 Febr.	19 Febr.	5 A	14 Mai j
3249	1	xxi iii	c	19. 2 A	18 A	21 Febr.	10 Mart.	25 A	3 Iun ij
3250	2	v	b	8. 11 A	8 A	6 Febr.	23 Febr.	10 A	19 Mai j
3251	3	xvi	A	28. 20 M	28 M	29 Ian.	15 Febr.	2 A	11 Mai j
3252	4	xx vii	g f	15. 17 A	16 A	18 Febr.	6 Mart.	21 A	30 Mai j
3253	5	viii	e	5. 2 A	5 A	2 Febr.	19	6 A	15

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
							Febr.		Mai j
3254	6	xix	d	25. 11 M	25 M	25 Ian.	11 Febr.	29 M	7 Mai j
3255	7	*	c	13. 8 A	13 A	14 Febr.	3 Mart.	18 A	27 Mai j
3256	8	xi	b A	1. 17 A	2 A	6 Febr.	23 Febr.	9 A	18 Mai j
3257	9	xxi i	g	22. 2 M	22 M	21 Ian.	7 Febr.	25 M	3 Mai j
3258	10	iii	f	10. 0 A	10 A	10 Febr.	27 Febr.	14 A	23 Mai j
3259	11	xiii i	e	30. 8 M	30 M	3[?] Febr.	20 Febr.	6 A	15 Mai j
3260	12	25	d c	17. 6 A	17 A	15 Febr.	3 Mart.	18 A	27 Mai j
3261	13	vi	b	6. 15 A	7 A	6 Febr.	23 Febr.	10 A	19 Mai j
3262	14	xvi i	A	26. 23 M	27 M	29 Ian.	15 Febr.	2 A	11 Mai j
3263	15	xx viii	g	14. 21 A	15 A	18 Febr.	7 Mart.	22 A	31 Mai j
3264	16	ix	f e	3. 6 A	4 A	3 Febr.	20	6 A	15

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
							Febr.		Mai j
3265	17	xx	d	23. 15 M	24 M	25 Ian.	11 Febr.	29 M	7 Mai j
3266	18	j	c	11. 12 A	12 A	14 Febr.	3 Mart.	18 A	27 Mai j
3267	19	xii	b	31. 21 M	1 A	30 Ian.	16 Febr.	3 A	12 Mai j
3268	1	xxi iii	A g	18. 19 A	18 A	19 Febr.	7 Mart.	22 A	31 Mai j
3269	2	v	f	8. 3 A	8 A	10 Febr.	27 Febr.	14 A	23 Mai j
3270	3	xvi	e	28. 12 M	28 M	26 Ian.	12 Febr.	30 M	8 Mai j
3271	4	xx vii	d	16. 10 A	16 A	15 Febr.	4 Mart.	19 A	28 Mai j
3272	5	viii	c b	4. 19 A	5 A	7 Febr.	24 Febr.	10 A	19 Mai j
3273	6	xix	A	25. 3 M	25 M	22 Ian.	8 Febr.	26 M	4 Mai j
3274	7	*	g	13. 1 A	13 A	11 Febr.	28 Febr.	15 A	24 Mai i
3275	8	xi	f	2. 10 A	2 A	3 Febr.	20	7 A	16

Anni Domini	Aur. Num.	Epactæ	Lit. Dom.	Plenilunia media (D. H. mo)	Lunæ 14	Septuagesima	Dies Cinerum	Pascha nov.	Ascensio
							Febr.		Maij
3276	9	xxi i	e d	21. 19 M	22 M	26 Ian.	12 Febr.	29 M	7 Maij
3277	10	iii	c	9. 16 A	10 A	7 Febr.	24 Febr.	11 A	20 Maij
3278	11	xiii i	b	30. 1 M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
3279	12	25	A	17. 22 A	17 A	19 Febr.	8 Mart.	23 A	1 Iunij

Facing page — remaining Gregorian columns and old-calendar (Julian) block — A.D. 3224–3279

Column heads (as printed): *Anni Domini* | *Pentecoste* | *Corpus Domini* | *Indictio* | *Dñicæ post Pentecosten* (Sundays after Pentecost) | *Dominica prima Adventus* | *Literæ Dñicales Calendarij veteris* | *Lunæ xiiij Cal. veteris* | *Pascha Caléd. veteris* | *Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt* (Diff.).

Anni Domini	Pentecos te	Corpus Domini	Indictio	Dñicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ 14 vet.	Pascha vet.	Differ f.
3224	19 Maij	30 Maij	2	27	1 Dec.	f e	12 A	13 A	3 5
3225	8 Iunij	19 Iunij	3	24	30 Nou.	d	1 A	5 A	7
3226	24 Maij	4 Iunij	4	26	29 Nou.	c	21 M	28 M	1 4
3227	16	27	5	27	28 Nou.	b	9 A	10 A	3

Anni Dom ini	Pent ecos te	Corpu s Domi ni	In dic tio	Dñicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ 14 vet.	Pasc ha vet.	D i ff f.
	Maij	Maij							5
3228	4 Iuni j	15 Iunij	6	25	3 Dec.	A g	29 M	1 A	7
3229	27 Maij	7 Iunij	7	26	2 Dec.	f	17 A	21 A	3 5
3230	9 Iuni j	20 Iunij	8	24	1 Dec.	e	5 A	6 A	7
3231	1 Iuni j	12 Iunij	9	25	30 Nou.	d	25 M	29 M	7
3232	23 Maij	3 Iunij	10	26	28 Nou.	c b	13 A	17 A	3 5
3233	5 Iuni j	16 Iunij	11	24	27 Nou.	A	2 A	9 A	1 4
3234	28 Maij	8 Iunij	12	26	3 Dec.	g	22 M	25 M	7
3235	20 Maij	31 Maij	13	27	2 Dec.	f	10 A	14 A	3 5
3236	8 Iuni j	19 Iunij	14	24	30 Nou.	e d	30 M	5 A	7
3237	24 Maij	4 Iunij	15	26	29 Nou.	c	18 A	25 A	4 2
3238	16 Maij	27 Maij	1	27	28 Nou.	b	7 A	10 A	3 5
3239	5 Iuni j	16 Iunij	2	24	27 Nou.	A	27 M	2 A	7
3240	20	31	3	27	2 Dec.	g f	15 A	21 A	4

Anni Dom ini	Pent ecos te	Corpu s Domi ni	In dic tio	Dñicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ 14 vet.	Pasc ha vet.	D i ff f.
	Maij	Maij							2
3241	9 Iunij	20 Iunij	4	24	1 Dec.	e	4 A	6 A	7
3242	1 Iunij	12 Iunij	5	25	30 Nou.	d	24 M	29 M	7
3243	17 Maij	28 Maij	6	27	29 Nou.	c	12 A	18 A	4 2
3244	5 Iunij	16 Iunij	7	24	27 Nou.	b A	1 A	2 A	7
3245	28 Maij	8 Iunij	8	26	3 Dec.	g	21 M	25 M	7
3246	13 Maij	24 Maij	9	28	2 Dec.	f	9 A	14 A	4 2
3247	2 Iunij	13 Iunij	10	25	1 Dec.	e	29 M	30 M	7
3248	24 Maij	4 Iunij	11	26	29 Nou.	d c	17 A	18 A	3 5
3249	13 Iunij	24 Iunij	12	23	28 Nou.	b	5 A	10 A	7
3250	29 Maij	9 Iunij	13	25	27 Nou.	A	25 M	26 M	7
3251	21 Maij	1 Iunij	14	27	3 Dec.	g	13 A	15 A	3 5
3252	9 Iunij	20 Iunij	15	24	1 Dec.	f e	2 A	6 A	7
3253	25	5 Iunij	1	26	30 Nou.	d	22 M	29 M	1

Anni Dom ini	Pent ecos te	Corpu s Domi ni	In dic tio	Dñicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ 14 vet.	Pasc ha vet.	D i ff f.
	Maii								4
3254	17 Maij	28 Maij	2	27	29 Nou.	c	10 A	11 A	3 5
3255	6 Iuni j	17 Iunij	3	24	28 Nou.	b	30 M	3 A	7
3256	28 Maij	8 Iunij	4	26	3 Dec.	A g	18 A	22 A	3 5
3257	13 Maij	24 Maij	5	28	2 Dec.	f	7 A	14 A	4 2
3258	2 Iuni j	13 Iunij	6	25	1 Dec.	e	27 M	30 M	7
3259	25 Maij	5 Iunij	7	26	30 Nou.	d	15 A	19 A	3 5
3260	6 Iuni j	17 Iunij	8	24	28 Nou.	c b	4 A	10 A	1 4
3261	29 Maij	9 Iunij	9	25	27 Nou.	A	24 M	26 M	7
3262	21 Maij	1 Iunij	10	27	3 Dec.	g	12 A	15 A	3 5
3263	10 Iuni j	21 Iunij	11	24	2 Dec.	f	1 A	7 A	7
3264	25 Maij	5 Iunij	12	26	30 Nou.	e d	21 M	22 M	7
3265	17 Maij	28 Maij	13	27	29 Nou.	c	9 A	11 A	3 5
3266	6 Iuni j	17 Iunij	14	24	28 Nou.	b	29 M	3 A	7

Anni Dom ini	Pent ecos te	Corpu s Domi ni	In dic tio	Dñicae post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ 14 vet.	Pasc ha vet.	D i ff f.
3267	22 Maij	2 Iunij	15	26	27 Nou.	A	17 A	23 A	4 2
3268	10 Iunij	21 Iunij	1	24	2 Dec.	g f	5 A	7 A	7
3269	2 Iunij	13 Iunij	2	25	1 Dec.	e	25 M	30 M	7
3270	18 Maij	29 Maij	3	27	30 Nou.	d	13 A	19 A	4 2
3271	7 Iunij	18 Iunij	4	24	29 Nou.	c	2 A	4 A	7
3272	29 Maij	9 Iunij	5	25	27 Nou.	b A	22 M	26 M	7
3273	14 Maij	25 Maij	6	28	3 Dec.	g	10 A	15 A	4 2
3274	3 Iunij	14 Iunij	7	25	2 Dec.	f	30 M	31 M	7
3275	26 Maij	6 Iunij	8	26	1 Dec.	e	18 A	20 A	3 5
3276	17 Maij	28 Maij	9	27	29 Nou.	d c	7 A	11 A	3 5
3277	30 Maij	10 Iunij	10	25	28 Nou.	b	27 M	3 A	1 4
3278	22 Maij	2 Iunij	11	26	27 Nou.	A	15 A	16 A	3 5
3279	11 Iunij	22 Iunij	12	24	3 Dec.	g	4 A	8 A	7

New-calendar (Gregorian) leaf — A.D. 3280–3335

Column heads as in the first table above.

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3280	13	vi	g f	6. 7 A	7 A	11 Febr.	28 Febr.	14 A	23 Mai j
3281	14	xvi i	e	26. 16 M	27 M	26 Ian.	12 Febr.	30 M	8 Mai j
3282	15	xx viii	d	14. 14 A	15 A	15 Febr.	4 Mart.	19 A	28 Mai j
3283	16	ix	c	3. 22 A	4 A	7 Febr.	24 Febr.	11 A	20 Mai j
3284	17	xx	b A	23. 7 M	24 M	23 Ian.	9 Febr.	26 M	4 Mai j
3285	18	i	g	11. 5 A	12 A	11 Febr.	28 Febr.	15 A	24 Mai j
3286	19	xii	f	31. 14 M	1 A	3 Febr.	20 Febr.	7 A	16 Mai j
3287	1	xxi iii	e	19. 11 A	18 A	16 Febr.	5 Mart.	20 A	29 Mai j
3288	2	v	d c	7. 20 A	8 A	8 Febr.	25 Febr.	11 A	20 Mai j
3289	3	xvi	b	28. 5 M	28 M	30 Ian.	16 Febr.	3 A	12 Mai j

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3290	4	xx vii	A	16. 2 A	16 A	19 Febr.	8 Mart.	23 A	1 Jun ij
3291	5	viii	g	5. 11 A	5 A	4 Febr.	21 Febr.	8 A	17 Mai j
3292	6	xix	f e	24. 20 M	25 M	27 Ian.	13 Febr.	30 M	8 Mai j
3293	7	*	d	12. 17 A	13 A	15 Febr.	4 Mart.	19 A	28 Mai j
3294	8	xi	c	2. 2 A	2 A	31 Ian.	17 Febr.	4 A	13 Mai j
3295	9	xxi i	b	22. 11 M	22 M	23 Ian.	9 Febr.	27 M	5 Mai j
3296	10	iii	A g	9. 9 A	10 A	12 Febr.	29 Febr.	15 A	24 Mai j
3297	11	xiii i	f	29. 17 M	30 M	27 Ian.	13 Febr.	31 M	9 Mai j
3298	12	25	e	17. 15 A	17 A	16 Febr.	5 Mart.	20 A	29 Mai j
3299	13	vi	d	7. 0 A	7 A	8 Febr.	25 Febr.	12 A	21 Mai j
3300	14	xvi i	c	28. 9 M	27 M	24 Ian.	10 Febr.	28 M	6 Mai j

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3301	15	xx viii	b	15. 6 A	15 A	13 Febr.	2 Mart.	17 A	26 Mai j
3302	16	ix	A	4. 15 A	4 A	5 Febr.	22 Febr.	9 A	18 Mai j
3303	17	xx	g	25. 0 M	24 M	21 Ian.	7 Febr.	25 M	3 Mai j
3304	18	i	f e	11. 21 A	12 A	10 Febr.	27 Febr.	13 A	22 Mai j
3305	19	xii	d	1. 6 A	1 A	1 Febr.	18 Febr.	5 A	14 Mai j
3306	1	xxi iii	c	20. 4 A	18 A	21 Febr.	10 Mart.	25 A	3 Iun ij
3307	2	v	b	9. 12 A	8 A	6 Febr.	23 Febr.	10 A	19 Mai j
3308	3	xvi	A g	28. 21 M	28 M	29 Ian.	15 Febr.	1 A	10 Mai j
3309	4	xx vii	f	16. 19 A	16 A	10 Febr.	27 Febr.	14 A	23 Mai j
3310	5	viii	e	6. 4 A	5 A	2 Febr.	19 Febr.	6 A	15 Mai j
3311	6	xix	d	26. 12 M	25 M	25 Ian.	11 Febr.	29 M	7 Mai j

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3312	7	*	c b	13. 10 A	13 A	14 Febr.	2 Mart.	17 A	26 Mai j
3313	8	xi	A	2. 19 A	2 A	5 Febr.	22 Febr.	9 A	18 Mai j
3314	9	xxi i	g	23. 4 M	22 M	21 Ian.	7 Febr.	25 M	3 Mai j
3315	10	iii	f	11. 1 A	10 A	10 Febr.	27 Febr.	14 A	23 Mai j
3316	11	xiii i	e d	30. 10 M	30 M	2 Febr.	19 Febr.	5 A	14 Mai j
3317	12	25	c	18. 7 A	17 A	14 Febr.	3 Mart.	18 A	27 Mai j
3318	13	vi	b	7. 16 A	7 A	6 Febr.	23 Febr.	10 A	19 Mai j
3319	14	xvi i	A	28. 1 M	27 M	29 Ian.	15 Febr.	2 A	11 Mai j
3320	15	xx viii	g f	14. 23 A	15 A	18 Febr.	6 Mart.	21 A	30 Mai j
3321	16	ix	e	4. 7 A	4 A	2 Febr.	19 Febr.	6 A	15 Mai j
3322	17	xx	d	24. 16 M	24 M	25 Ian.	11 Febr.	29 M	7 Mai j

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3323	18	j	c	12. 14 A	12 A	14 Febr.	3 Mart.	18 A	27 Mai j
3324	19	xii	b A	31. 23 M	1 A	30 Ian.	16 Febr.	2 A	11 Mai j
3325	1	xxi iii	g	19. 20 A	18 A	18 Febr.	7 Mart.	22 A	31 Mai j
3326	2	v	f	9. 5 A	8 A	10 Febr.	27 Febr.	14 A	23 Mai j
3327	3	xvi	e	29. 14 M	28 M	26 Ian.	12 Febr.	30 M	8 Mai j
3328	4	xx vii	d c	16. 11 A	16 A	15 Febr.	3 Mart.	18 A	27 Mai j
3329	5	viii	b	5. 20 A	5 A	6 Febr.	23 Febr.	10 A	19 Mai j
3330	6	xix	A	26. 5 M	25 M	22 Ian.	8 Febr.	26 M	4 Mai j
3331	7	*	g	14. 2 A	13 A	11 Febr.	28 Febr.	15 A	24 Mai i
3332	8	xi	f e	2. 11 A	2 A	3 Febr.	20 Febr.	6 A	15 Mai j
3333	9	xxi i	d	22. 20 M	22 M	25 Ian.	11 Febr.	29 M	7 Mai j

Anni Domi ni	Aur. Nu m.	Ep act æ	Lit. Dom .	Plenilunia media (D. H. mo)	Lun æ 14	Septua gesim a	Dies Cineru m	Pasch a nov.	Asc ens io
3334	10	iii	c	10. 18 A	10 A	7 Febr.	24 Febr.	11 A	20 Mai j
3335	11	xiii i	b	31. 2 M	30 M	30 Ian.	16 Febr.	3 A	12 Mai j

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (1600–5000), continued

These three leaves continue the great table of movable feasts. Each opening pairs a **new-calendar (Gregorian)** verso with a **new-/old-calendar comparison** recto: the verso (headed *Calend. Greg. — Tabula Festorum*) carries golden number, epact, Gregorian dominical letter, the mean full moon, Luna 14, and the earlier feasts (Septuagesima, Ash Wednesday, Easter, Ascension); the recto (headed *Caput XXII — Mobilium Temporaria*) carries the later new-calendar feasts (Pentecost, Corpus Christi, Advent) together with the old-calendar (*veteris*) dominical letter, Luna 14, Easter, and the difference between the two Easters.

Latin forms are transcribed verbatim from the leaf, including variant spellings (*Maii*, *Mart.*, *Deç.*), i-/j-terminal Roman numerals, Roman xxv vs Arabic 25, the cedilla dominical ç (= c), and the epact-30 asterisk *. Month abbreviations: **Ian.** = January, **Feb.** = February, **Mar./Mart.** = March, **Maij/Maii** = May, **Iunij** = June, **Nou.** = November, **Dec./Deç.** = December. In the moon/Easter columns the trailing letter marks the month: **M** = *Martius* (March), **A** = *Aprilis* (April). In the mean-full-moon column the three figures are **D** (day) · **H** (hour) · month.

Old-calendar comparison leaf — A.D. 3280–3335 (later new-calendar feasts + old-calendar columns)

[The left-hand columns for these years — golden number, epact, Gregorian dominical letter, mean full moon, Luna 14, Septuagesima, Ash Wednesday, Easter, Ascension — stand on the preceding leaf; this leaf carries the continuation.]

A	D	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter	D
.	.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)	iff
3	2	13 Iunij	13	25	1	f e		24 M	30 M	7
2	Iunij				Dec.					
8										
0										
3	18	29 Maij	14	27	30	d		12 A	19 A	4
2	Maij				Nou					2
8					.					
1										
3	7	18 Iunij	15	24	29	c		1 A	4 A	7
2	Iunij				Nou					
8					.					
2										
3	30	10 Iunij	1	25	28	b		21 M	27 M	7
2	Maij				Nou					
8					.					
3										
3	14	25 Maij	2	28	3	A g		9 A	15 A	4
2	Maij				Dec.					2
8										
4										
3	3	14 Iunij	3	25	2	f		29 M	31 M	7
2	Iunij				Dec.					
8										
5										
3	26	6 Iunij	4	26	1	e		17 A	20 A	3
2	Maij				Dec.					5
8										
6										
3	8	19 Maij	5	24	30	d		5 A	12 A	1
2	Iunij				Nou					4
8					.					
7										
3	30	10 Iunij	6	25	28	ç b		25 M	27 M	7

A . D . .	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	1st Adv.	Dom. lett. (old)	Luna 14 (old)	Easter (old)	D iff .
2 8 8	Maij				Nou .				
3 2 8 9	22 Maij	2 Iunij	7	26	27 Nou .	A	13 A	16 A	3 5
3 2 9 0	11 Iunij	22 Iunij	8	24	3 Dec.	g	2 A	8 A	7
3 2 9 1	27 Maij	7 Iunij	9	26	2 Dec.	f	22 M	24 M	7
3 2 9 2	18 Maij	29 Maij	10	27	30 Nou .	e d	10 A	12 A	3 5
3 2 9 3	7 Iunij	18 Iunij	11	24	29 Nou .	c	30 M	4 A	7
3 2 9 4	23 Maij	3 Iunij	12	26	28 Nou .	b	18 A	24 A	4 2
3 2 9 5	15 Maij	26 Maij	13	27	27 Nou .	A	7 A	9 A	3 5
3 2	3 Iunij	14 Iunij	14	25	2 Dec.	g f	27 M	31 M	7

A										D
.	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter		iff
.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)		.
9										
6										
3	19	30 Maij	15	27	1	e	15 A	20 A	4	
2	Maij				Dec.				2	
9										
7										
3	8	19 Iunij	1	24	30	d	4 A	5 A	7	
2	Iunij				Nou					
9					.					
8										
3	31	11 Iunij	2	25	29	c	24 M	28 M	7	
2	Maij				Nou					
9					.					
9										
3	16	27 Maij	3	27	28	b A	12 A	16 A	4	
3	Maij				Nou				2	
0					.					
0										
3	5	16 Iunij	4	24	27	g	1 A	8 A	1	
3	Iunij				Nou				4	
0					.					
1										
3	28	8 Iunij	5	26	3	f	21 M	24 M	7	
3	Maij				Dec.					
0										
2										
3	13	24 Maij	6	28	2	e	9 A	13 A	4	
3	Maij				Dec.				2	
0										
3										
3	1	12 Iunij	7	25	30	d c	29 M	4 A	1	
3	Iunij				Nou				4	
0					.					

A										D
.	D	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter	iff
.	.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)	.
3	28	8 Iunij	1	26	3	f		18 A	21 A	3
3	Maij				Dec.					5
1										
3										
3	13	24 Maij	2	28	2	e		7 A	13 A	4
3	Maij				Dec.					2
1										
4										
3	2	13 Iunij	3	25	1	d		27 M	29 M	7
3	Iunij				Deç.					
1										
5										
3	24	4 Iunij	4	26	29	c b		15 A	17 A	3
3	Maij				Nou					5
1					.					
6										
3	6	17 Iunij	5	24	28	A		4 A	9 A	1
3	Iunij				Nou					4
1					.					
7										
3	29	9 Iunij	6	25	27	g		24 M	25 M	7
3	Maij				Nou					
1					.					
8										
3	21	1 Iunij	7	27	3	f		12 A	14 A	3
3	Maij				Dec.					5
1										
9										
3	9	20 Iunij	8	24	1	e d		1 A	5 A	7
3	Iunij				Dec.					
2										
0										
3	25	5 Iunij	9	26	30	c		21 M	28 M	1

A										D
.	D	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter	iff
.	.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)	.
3	2	1	Maij			Nou				4
3	3	2				.				
3	3	2	17 Maij	28 Maij	10	27	29 b	9 A	10 A	3
3	2	2				Nou				5
3	3	2	6 Iunij	17 Iunij	11	24	28 A	29 M	2 A	7
3	3	3				Nou				
3	3	2	21 Maij	1 Iunij	12	27	3 g f	17 A	21 A	4
3	2	4				Dec.				2
3	3	2	10 Iunij	21 Iunij	13	24	2 e	5 A	6 A	7
3	3	5				Dec.				
3	3	2	2 Iunij	13 Iunij	14	25	1 d	25 M	29 M	7
3	3	6				Dec.				
3	3	2	18 Maij	29 Maij	15	27	30 c	13 A	18 A	4
3	3	7				Nou				2
3	3	2	6 Iunij	17 Iunij	1	24	28 b A	2 A	9 A	1
3	3	8				Nou				4
3	3	2				.				
3	3	2	29 Maij	9 Iunij	2	25	27 g	22 M	25 M	7
3	3	2				Nou				

A D	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	1st Adv.	Dom. lett. (old)	Luna 14 (old)	Easter (old)	D iff
29					.				
330	14 Maij	25 Maij	3	28	3 Dec.	f	10 A	14 A	42
331	3 Iunij	14 Iunij	4	25	2 Dec.	e	30 M	6 A	14
332	25 Maij	5 Iunij	5	26	30 Nou.	d c	18 A	25 A	42
333	17 Maij	28 Maij	6	27	29 Nou.	b	7 A	10 A	35
334	30 Maij	10 Iunij	7	25	28 Nou.	A	27 M	2 A	14
335	22 Maij	2 Iunij	8	26	27 Nou.	g	15 A	22 A	42

A . D .	G . N .	Ep act	Dom. lett.	Mean full moon (D·H·m)	Lu na 14	Septuag esima	Ash Wed.	Easter (new)	Asce nsion
3 3 3 6	1 2	25	A g	18 · 0 · A	17 A	19 Feb.	7 Mar.	22 A	31 Maij
3 3 3 7	1 3	vi	f	7 · 9 · A	7 A	10 Feb.	27 Feb.	14 A	23 Maij
3 3 3 8	1 4	xv ij	e	27 · 18 · M	27 M	26 Ian.	12 Feb.	30 M	8 Maij
3 3 3 9	1 5	xx vii i	d	15 · 15 · A	15 A	15 Feb.	4 Mar.	19 A	28 Maij
3 3 4 0	1 6	ix	c b	4 · 0 · A	4 A	7 Feb.	24 Feb.	10 A	19 Maij
3 3 4 1	1 7	xx	A	24 · 9 · M	24 M	22 Ian.	8 Feb.	26 M	4 Maij
3 3 4 2	1 8	j	g	12 · 6 · A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
3 3	1 9	xij	f	1 · 15 · A	1 A	3 Feb.	20 Feb.	7 A	16 Maij

[illegible]

[illegible]

A . D . . .	G . N . . .	Ep act	Dom. lett.	Mean full moon (D·H·m)	Lu na 14	Septuag esima	Ash Wed.	Easter (new)	Asce nsion
3 3 6 0	1 7	xx	f e	24 · 1 · M	24 M	27 Ian.	13 Feb.	30 M	8 Maij
3 3 6 1	1 8	j	d	11 · 23 · A	12 A	15 Feb.	4 Mart.	19 A	28 Maij
3 3 6 2	1 9	xij	c	1 · 8 · A	1 A	31 Ian.	17 Feb.	4 A	13 Maij
3 3 6 3	1	xx iiii	b	20 · 5 · A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
3 3 6 4	2	v	A g	8 · 14 · A	8 A	12 Feb.	29 Feb.	15 A	24 Maij
3 3 6 5	3	xvj	f	28 · 23 · M	28 M	27 Ian.	13 Feb.	31 M	9 Maii
3 3 6 6	4	xx vij	e	16 · 20 · A	16 A	16 Feb.	5 Mar.	20 A	29 Maij
3 3 6 7	5	vii i	d	6 · 5 · A	5 A	8 Feb.	25 Feb.	12 A	21 Maij
3	6	xi	c b	25 · 14 · M	25	24 Ian.	10 Feb.	27 M	5

A D .	G N .	Ep act	Dom. lett.	Mean full moon (D·H·m)	Lu na 14	Septuag esima	Ash Wed.	Easter (new)	Asce nsion
3 6 8		x			M		[?]		Maij
3 3 6 9	7	*	A	13 · 12 · A	13 A	12 Feb.	1 Mar.	16 A	25 Maij
3 3 7 0	8	xj	g	2 · 20 · A	2 A	4 Feb.	21 Feb.	8 A	17 Maij
3 3 7 1	9	xx ij	f	23 · 5 · M	22 M	20 Ian.	6 Feb.	24 M	2 Maij
3 3 7 2	1 0	iiij	e d	10 · 3 · A	10 A	9 Feb.	26 Feb.	12 A	21 Maij
3 3 7 3	1 1	xii ii	c	30 · 12 · M	30 M	31 Ian.	17 Feb.	4 A	13 Maij
3 3 7 4	1 2	25	b	18 · 9 · A	17 A	20 Feb.	9 Mar.	24 A	2 Iunij
3 3 7 5	1 3	vi	A	7 · 18 · A	7 A	5 Feb.	22 Feb.	9 A	18 Maij
3 3	1 4	xv ij	g f	27 · 3 · M	27 M	28 Ian.	14 Feb.	31 M	9 Maij

A D .	G N .	Ep act	Dom. lett.	Mean full moon (D·H·m)	Lu na 14	Septuag esima	Ash Wed.	Easter (new)	Asce nsion
4									
3 3 8 5	4	xx vij	b	16 · 13 · A	16 A	13 Feb.	2 Mar.	17 A	26 Maij
3 3 8 6	5	vii i	A	5 · 22 · A	5 A	5 Feb.	22 Feb.	9 A	18 Maij
3 3 8 7	6	xi x	g	26 · 7 · M	25 M	28 Ian.	14 Feb.	1 A	10 Maij
3 3 8 8	7	*	f e	13 · 4 · A	13 A	17 Feb.	5 Mar.	20 A	29 Maij
3 3 8 9	8	xj	d	2 · 13 · A	2 A	1 Feb.	18 Feb.	5 A	14 Maij
3 3 9 0	9	xx ij	c	22 · 22 · M	22 M	24 Ian.	10 Feb.	28 M	6 Maij
3 3 9 1	10	iiij	b	10 · 19 · A	10 A	13 Feb.	2 Mar.	17 A	26 Maij

Old-calendar comparison leaf — A.D. 3336–3391 (later new-calendar feasts + old-calendar columns)

A									D
.	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter	iff
.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)	.
3	10	21 Iunij	9	24	2	f e	4 A	6 A	7
3	Iunij				Dec.				
3									
6									
3	2	13 Iunij	10	25	1	d	24 M	29 M	7
3	Iunij				Dec.				
3									
7									
3	18	29 Maij	11	27	30	c	12 A	18 A	4
3	Maij				Nou				2
3					.				
8									
3	7	18 Iunij	12	24	29	b	1 A	3 A	7
3	Iunij				Nou				
3					.				
9									
3	29	9 Iunij	13	25	27	A g	21 M	25 M	7
3	Maij				Nou				
4					.				
0									
3	14	25 Maij	14	28	3	f	9 A	14 A	4
3	Maij				Dec.				2
4									
1									
3	3	14 Iunij	15	25	2	e	29 M	30 M	7
3	Iunij				Dec.				
4									
2									
3	26	6 Iunij	1	26	1	d	17 A	19 A	3
3	Maij				Dec.				5

A . D .	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	1st Adv.	Dom. lett. (old)	Luna 14 (old)	Easter (old)	D iff .
4									
3									
3 3 4 4	7 Iunij	18 Iunij	2	24	29 Nou .	c b	5 A	10 A	1 4
3 3 4 5	30 Maij	10 Iunij	3	25	28 Nou .	A	25 M	26 M	7
3 3 4 6	22 Maij	2 Iunij	4	26	27 Nou .	g	13 A	15 A	3 5
3 3 4 7	11 Iunij	22 Iunij	5	24	3 Dec.	f	2 A	7 A	7
3 3 4 8	26 Maij	6 Iunij	6	26	1 Dec.	e d	22 M	29 M	1 4
3 3 4 9	18 Maij	29 Maij	7	27	30 Nou .	c	10 A	11 A	3 5
3 3 5 0	7 Iunij	18 Iunij	8	24	29 Nou .	b	30 M	3 A	7
3 3 5	23 Maij	3 Iunij	9	26	28 Nou .	A	18 A	23 A	4 2

[illegible]

A										D
.	D	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter	iff
.	.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)	.
3	18	29 Maij	3	27	30	d c		9 A	11 A	3
3	Maij				Nou					5
6					.					
0										
3	7	18 Iunij	4	24	29	b		29 M	3 A	7
3	Iunij				Nou					
6					.					
1										
3	23	3 Iunij	5	26	28	A		17 A	23 A	4
3	Maij				Nou					2
6					.					
2										
3	12	23 Iunij	6	23	27	g		5 A	8 A	7
3	Iunij				Nou					
6					.					
3										
3	3	14 Iunij	7	25	2	f e		25 M	30 M	7
3	Iunij				Dec.					
6										
4										
3	19	30 Maij	8	27	1	d		13 A	19 A	4
3	Maij				Dec.					2
6										
5										
3	8	19 Iunij	9	24	30	c		2 A	4 A	7
3	Iunij				Nou					
6					.					
6										
3	31	11 Iunij	10	25	29	b		22 M	27 M	7
3	Maij				Nou					
6					.					
7										
3	15	26 Maij	11	27	27	A g		10 A	15 A	4

A . D . .	Pent ecost	Corpus Christi	Ind ict.	Sun. p. Pent.	1st Adv.	Dom. lett. (old)	Luna 14 (old)	Easter (old)	D iff .
3 6 8	Maij				Nou .				2
3 3 6 9	4 Iunij	15 Iunij	12	25	3 Dec.	f	30 M	31 M	7
3 3 7 0	27 Maij	7 Iunij	13	26	2 Dec.	e	18 A	20 A	3 5
3 3 7 1	12 Maij	23 Maij	14	28	1 Dec.	d	7 A	12 A	4 2
3 3 7 2	31 Maij	11 Iunij	15	25	29 Nou .	c b	27 M	3 A	1 4
3 3 7 3	23 Maij	3 Iunij	1	26	28 Nou .	A	15 A	16 A	3 5
3 3 7 4	12 Iunij	23 Iunij	2	23	27 Nou .	g	4 A	8 A	7
3 3 7 5	28 Maij	8 Iunij	3	26	3 Dec.	f	24 M	31 M	1 4
3 3	19 Maii	30 Maij	4	27	1 Dec.	e d	12 A	19 A	4 2

A										D
.	Pent	Corpus	Ind	Sun. p.	1st	Dom. lett.	Luna 14	Easter		iff
.	ecost	Christi	ict.	Pent.	Adv.	(old)	(old)	(old)		.
7										
6										
3	8	19 Iunij	5	24	30	c	1 A	4 A	7	
3	Iunij				Nou					
7					.					
7										
3	24	4 Iunij	6	26	29	b	21 M	27 M	1	
3	Maij				Nou				4	
7					.					
8										
3	16	27 Maij	7	27	28	A	9 A	16 A	4	
3	Maij				Nou				2	
7					.					
9										
3	4	15 Iunij	8	25	3	g f	29 M	31 M	7	
3	Iunij				Dec.					
8										
0										
3	27	7 Iunij	9	26	2	e	17 A	20 A	3	
3	Maij				Dec.				5	
8										
1										
3	9	20 Iunij	10	24	1	d	5 A	12 A	1	
3	Iunij				Dec.				4	
8										
2										
3	1	12 Iunij	11	25	30	c	25 M	28 M	7	
3	Iunij				Nou					
8					.					
3										
3	23	3 Iunij	12	26	28	b A	13 A	16 A	3	
3	Maij				Nou				5	
8					.					

A	D Pentecost	Corpus Christi	Indict.	Sun. p. Pent.	1st Adv.	Dom. lett. (old)	Luna 14 (old)	Easter (old)	D iff .
4	3 5 Iunii	16 Iunii	13	24	27 Nou.	g	2 A	8 A	1 4
3 8 5	3 28 Maij	8 Iunii	14	26	3 Dec.	f	22 M	24 M	7
3 8 6	3 20 Maij	31 Maij	15	27	2 Dec.	e	10 A	13 A	3 5
3 8 7	3 8 Iunii	19 Iunii	1	24	30 Nou.	d c	30 M	4 A	7
3 8 8	3 24 Maij	4 Iunii	2	26	29 Nou.	b	18 A	24 A	4 2
3 8 9	3 16 Maij	27 Maij	3	27	28 Nou.	A	7 A	9 A	3 5
3 9 0	3 5 Iunii	16 Iunii	4	24	27 Nou.	g	27 M	1 A	7

(Caput XXII, continued — the perpetual-by-period table for A.D. 1600–5000. This opening carries the years 3392–3447 across its two leaves; the following new-calendar leaf carries 3448–3503.)

Roman/Arabic epact forms, i-/j-terminal sorts, and capital/small letters are transcribed as printed.

Folio 444 — new (Gregorian) calendar

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
3 3 9 2	11	xi iii	A g	30·4·M	30 M	29 Ian.	15 Febr.	1 A	10 Mai j
3 3 9 3	12	25	f	18·2·A	17 A	17 Febr.	6 Mart.	21 A	30 Mai j

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
3 3 9 4	13	vi	e	7·10·A	7 A	9 Febr.	26 Febr.	13 A	22 Mai j
3 3 9 5	14	xv ii	d	27·19·M	27 M	25 Ian.	11 Febr.	29 M	7 Mai j
3 3 9 6	15	xx vi ii	c b	14·17·A	15 A	14 Febr.	2 Mart.	17 A	26 Mai j
3 3 9 7	16	ix	A	4·2·A	4 A	5 Febr.	22 Febr.	9 A	18 Mai j
3 3 9 8	17	xx	g	24·10·M	24 M	21 Ian.	7 Febr.	25 M	3 Mai j
3 3 9 9	18	i	f	12·8·A	12 A	10 Febr.	27 Febr.	14 A	23 Mai j
3 4 0 0	19	xi	e	2·17·A	2 A	2 Febr.	19 Febr.	6 A	15 Mai j
3 4 0 1	1	xx iii	d	22·2·M	21 M	18 Ian.	4 Febr.	22 M	30 Apr .
3	2	iii	c	9·23·A	9 A	7	24	11 A	20

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
4 0 2		i				Febr.	Febr.		Mai j
3 4 0 3	3	xv	b	30·8·M	29 M	30 Ian.	16 Febr.	3 A	12 Mai j
3 4 0 4	4	xx vi	A g	17·5·A	17 A	19 Febr.	7 Mart.	22 A	31 Mai j
3 4 0 5	5	vi i	f	6·14·A	6 A	3 Febr.	20 Febr.	7 A	16 Mai j
3 4 0 6	6	xv iii	e	26·23·M	26 M	26 Ian.	12 Febr.	30 M	8 Mai j
3 4 0 7	7	xx ix	d	14·21·A	14 A	15 Febr.	4 Mart.	19 A	28 Mai j
3 4 0 8	8	x	c b	3·5·A	3 A	7 Febr.	24 Febr.	10 A	19 Mai j
3 4 0 9	9	xx i	A	23·14·M	23 M	22 Ian.	8 Febr.	26 M	4 Mai j
3 4	10	ij	g	11·12·A	11 A	11 Febr.	28 Febr.	15 A	24 Mai

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
1 0									j
3 4 1 1	11	xi ii	f	31·21·M	31 M	3 Febr.	20 Febr.	7 A	16 Mai j
3 4 1 2	12	xx iii i	e d	18·18·A	18 A	16 Febr.	4 Mart.	19 A	28 Mai j
3 4 1 3	13	v	ç	8·3·A	8 A	7 Febr.	24 Febr.	11 A	20 Mai j
3 4 1 4	14	xv i	b	28·12·M	28 M	30 Ian.	16 Febr.	3 A	12 Mai j
3 4 1 5	15	xx vi i	A	16·9·A	16 A	19 Febr.	8 Mart.	23 A	1 Iun ij
3 4 1 6	16	vi ii	g f	4·18·A	5 A	4 Febr.	21 Febr.	7 A	16 Mai j
3 4 1 7	17	xi x	e	25·3·M	25 M	26 Ian.	12 Febr.	30 M	8 Mai j
3 4 1	18	*	d	13·1·A	13 A	15 Febr.	4 Mart.	19 A	28 Mai j

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
8									
3419	19	xi	c	2·9·A	2 A	31 Ian.	17 Febr.	4 A	13 Mai j
3420	1	xxiii	b A	21·18·M	21 M	23 Ian.	9 Febr.	26 M	4 Mai j
3421	2	iii i	g	9·16·A	9 A	11 Febr.	28 Febr.	15 A	24 Mai j
3422	3	xv	f	30·0·M	29 M	27 Ian.	13 Febr.	31 M	9 Mai j
3423	4	xxvi	e	17·22·A	17 A	16 Febr.	5 Mart.	20 A	29 Mai j
3424	5	vi i	d c	6·7·A	6 A	8 Febr.	25 Febr.	11 A	20 Mai j
3425	6	xviii	b	26·16·M	26 M	23 Ian.	9 Febr.	27 M	5 Mai j
3426	7	xxix	A	14·13·A	14 A	12 Febr.	1 Mart.	16 A	25 Mai i

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
3 4 2 7	8	x	g	3·22·A	3 A	4 Febr.	21 Febr.	8 A	17 Mai j
3 4 2 8	9	xx i	f e	23·7·M	23 M	27 Ian.	13 Febr.	30 M	8 Mai j
3 4 2 9	10	ij	d	11·4·A	11 A	8 Febr.	25 Febr.	12 A	21 Mai j
3 4 3 0	11	xi ij	c	31·13·M	31 M	31 Ian.	17 Febr.	4 A	13 Mai j
3 4 3 1	12	xx iii j	b	19·11·A	18 A	20 Febr.	9 Mart.	24 A	2 Iun ij
3 4 3 2	13	v	A g	7·20·A	8 A	12 Febr.	29 Febr.	15 A	24 Mai j
3 4 3 3	14	xv i	f	28·4·M	28 M	27 Ian.	13 Febr.	31 M	9 Mai j
3 4 3 4	15	xx vi i	e	16·2·A	16 A	16 Febr.	5 Mart.	20 A	29 Mai j
3	16	vi	d	5·11·A	5 A	8	25	12 A	21

A . D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
4 3 5		ii				Febr.	Febr.		Mai j
3 4 3 6	17	xi x	c b	24·20·M	25 M	24 Ian.	10 Febr.	27 M	5 Mai j
3 4 3 7	18	* A	A	12·17·A	13 A	12 Febr.	1 Mart.	16 A	25 Mai j
3 4 3 8	19	xi	g	2·2·A	2 A	4 Febr.	21 Febr.	8 A	17 Mai j
3 4 3 9	1	xx iii	f	22·11·M	21 M	20 Ian.	6 Febr.	24 M	2 Mai j
3 4 4 0	2	iii j	e d	9·8·A	9 A	9 Febr.	26 Febr.	12 A	21 Mai j
3 4 4 1	3	xv	c	29·17·M	29 M	31 Ian.	17 Febr.	4 A	13 Mai j
3 4 4 2	4	xx vi	b	17·15·A	17 A	20 Febr.	9 Mart.	24 A	2 Iun ij
3 4	5	vi i	A	6·23·A	6 A	5 Febr.	22 Febr.	9 A	18 Mai

A	E								
. Aur.	p					Septua	Dies		Asc
D Nu	ac	Lit. Dom.	Plenilunia	Lunæ	gesim	Cineru	Pascha		ens
. m.	t	(Greg.)	(D·H·mo)	xiiij	a	m	(nov.)		io
4									j
3									
3 6	xv	g f	26·8·M	26 M	28 Ian.	14	31 M	9	
4	iii					Febr.		Mai	
4								j	
4									
3 7	xx	e	14·6·A	14 A	16	5	20 A	29	
4	ix				Febr.	Mart.		Mai	
4								j	
5									
3 8	x	d	3·15·A	3 A	1	18	5 A	14	
4					Febr.	Febr.		Mai	
4								j	
6									
3 9	xx	c	23·23·M	23 M	24 Ian.	10	28 M	6	
4	j					Febr.		Mai	
4								j	
7									

Folio 445 — moveable feasts continued; old (Julian, *veteris*) calendar

Columns: Pentecost | Corpus Christi [Corpus Domini] | Indiction | Sundays after Pentecost [Dnicæ post Pentecosten] | First Sunday of Advent | Lit. Dom. (old cal.) | Lunæ xiiij (old cal.) | Pascha (old cal.) | Difference [days by which new-cal. Easter differs from old].

A			I					D
. Pent			n					i
D ecost	Corpus	d Dnic. p.	Dom. 1 ^a	Lit. Dom.	Lunæ xiiij	Pascha		ff
. e	Domini	. Pent.	Adv.	(vet.)	(vet.)	(vet.)		.
3 20	31 Maij	5 27	2 Dec.	f e	15 A	20 A		4
3 Maij								2
9								
2								

A . D . 3 3 9 3 3 9 4 3 3 9 5 3 3 9 6 3 3 9 7 3 3 9 8 3 3 9 9 3 4 0 0 3	Pent ecost e 9 Iunij 1 Iunij 17 Maij 5 Iunij 28 Maij 13 Maij 2 Iunij 25 Maij 10	Corpus Domini 20 Iunij 12 Iunij 28 Maij 16 Iunij 8 Iunij 24 Maij 13 Iunij 5 Iunij 21 Maij	I n d . Dnic. p. Pent. 6 24 7 25 8 27 9 24 1 26 0 1 28 1 28 1 25 1 26 3 1 28	Dom. 1 ^a Adv. 1 Dec. 30 Nou. 29 Nou. 27 Nou. 3 Dec. 2 Dec. 1 Dec. 30 Nou. 29 Nou.	Lit. Dom. (vet.) d c b A g f e d ç b A	Lunæ xiiij (vet.) 4 A 24 M 12 A 1 A 21 M 9 A 13 A 29 M 17 A 5 A	Pascha (vet.) 5 A 28 M 17 A 8 A 24 M 13 A 5 A 24 A 9 A	D i ff . 7 7 4 2 1 4 7 4 2 1 4 4 2 4

A D .	Pent ecost e	Corpus Domini	I n d .	Dnic. p. Pent.	Dom. 1 ^a Adv.	Lit. Dom. (vet.)	Lunæ xiiij (vet.)	Pascha (vet.)	D i ff .
4 0 1	Maij		4						2
3 4 0 2	30 Maij	10 Iunij	1 5	25	28 Nou.	g	25 M	1 A	1 4
3 4 0 3	22 Maij	2 Iunij	1	26	27 Nou.	f	13 A	14 A	3 5
3 4 0 4	10 Iunij	21 Iunij	2	24	2 Dec.	e d	2 A	5 A	7
3 4 0 5	26 Maij	6 Iunij	3	26	1 Dec.	c	22 M	28 M	1 4
3 4 0 6	18 Maij	29 Maij	4	27	30 Nou.	b	10 A	17 A	4 2
3 4 0 7	7 Iunij	18 Iunij	5	24	29 Nou.	A	30 M	2 A	7
3 4 0 8	19 Maij	9 Iunij	6	25	27 Nou.	g f	18 A	21 A	3 5
3 4	14 Maij	25 Maij	7	28	3 Dec.	e	7 A	13 A	4 2

A . D .	Pent ecoste .	Corpus Domini	I n d .	Dnic. p. Pent.	Dom. 1 ^a Adv.	Lit. Dom. (vet.)	Lunæ xiiij (vet.)	Pascha (vet.)	D i ff .
0 9									
3 4 1 0	3 Iunij	14 Iunij	8 25		2 Dec.	d	27 M	29 M	7
3 4 1 1	26 Maij	6 Iunij	9 26		1 Dec.	c	15 A	18 A	3 5
3 4 1 2	7 Iunij	18 Iunij	1 24 0		29 Nou.	b A	4 A	9 A	1 4
3 4 1 3	30 Maij	10 Iunij	1 25 1		28 Nou.	g	24 M	25 M	7
3 4 1 4	22 Maij	2 Iunij	1 26 2		27 Nou.	f	12 A	14 A	3 5
3 4 1 5	11 Iunij	22 Iunij	1 24 3		3 Dec.	e	1 A	6 A	7
3 4 1 6	26 Maij	6 Iunij	1 26 4		1 Dec.	d c	21 M	28 M	1 4
3 4 1 1	18 Maij	29 Maij	1 27 5		30 Nou.	b	9 A	10 A	3 5

A . D .	Pent ecoste	Corpus Domini	I n d .	Dnic. p. Pent.	Dom. 1 ^a Adv.	Lit. Dom. (vet.)	Lunæ xiiij (vet.)	Pascha (vet.)	D i ff .
7									
3 7 4 Iunij 1 8	18 Iunij	1	24		29 Nou.	A	29 M	2 A	7
3 23 4 Maij 1 9	3 Iunij	2	26		28 Nou.	g	17 A	22 A	4 2
3 14 4 Maij 2 0	25 Maij	3	28		3 Dec.	f e	5 A	6 A	3 5
3 3 4 Iunij 2 1	14 Iunij	4	25		2 Dec.	d	25 M	29 M	7
3 19 4 Maij 2 2	30 Maij	5	27		1 Dec.	c	13 A	18 A	4 2
3 8 4 Iunij 2 3	19 Iunij	6	24		30 Nou.	b	2 A	3 A	7
3 30 4 Maij 2 4	10 Iunij	7	25		28 Nou.	A g	22 M	25 M	7
3 15 4 Maij 2 5	26 Maij	8	27		27 Nou.	f	10 A	14 A	4 2

A . D . 3 4 2 6	Pent ecost e	Corpus Domini	I n d . 9	Dnic. p. Pent. 25	Dom. 1 ^a Adv. 3 Dec.	Lit. Dom. (vet.) e	Lunæ xiiij (vet.) 30 M	Pascha (vet.) 6 A	D i ff . 1 4
3 4 2 7	27 Maij	7 Iunij	1 0	26	2 Dec.	d	18 A	19 A	3 5
3 4 2 8	18 Maij	29 Maij	1 1	27	30 Nou.	c b	7 A	10 A	3 5
3 4 2 9	31 Maij	11 Iunij	1 2	25	29 Nou.	A	27 M	2 A	1 4
3 4 3 0	23 Maij	3 Iunij	1 3	26	28 Nou.	g	15 A	22 A	4 2
3 4 3 1	12 Iunij	23 Iunij	1 4	23	27 Nou.	f	4 A	7 A	7
3 4 3 2	3 Iunij	14 Iunij	1 5	25	2 Dec.	e d	24 M	29 M	7
3 4 3 3	19 Maij	30 Maij	1	27	1 Dec.	c	12 A	18 A	4 2
3 8	19 Iunij	2	24		30 Nou.	b	1 A	3 A	7

A . D . 4 3 4 3 4 3 5 3 4 3 6 3 4 3 7 3 4 3 8 3 4 3 9 3 4 4 0 3 4 4 1 3 4	Pent ecost e	Corpus Domini	I n d . Pent.	Dnic. p. Pent.	Dom. 1 ^a Adv.	Lit. Dom. (vet.)	Lunæ xiiij (vet.)	Pascha (vet.)	D i ff .
4 Iunij									
3 31	11 Iunij	3 25		29 Nou.	A	21 M	26 M	7	
4 Maij									
3 15	26 Maij	4 27		27 Nou.	g f	9 A	14 A	4	
4 Maij								2	
3 4	15 Iunij	5 25		3 Dec.	e	29 M	30 M	7	
4 Iunij									
3 27	7 Iunij	6 26		2 Dec.	d	17 A	19 A	3	
4 Maij								5	
3 12	23 Maij	7 28		1 Dec.	c	5 A	11 A	4	
4 Maij								2	
3 31	11 Iunij	8 25		29 Nou.	b A	25 M	26 M	7	
4 Maij									
3 23	3 Iunij	9 26		28 Nou.	g	13 A	15 A	3	
4 Maij								5	
3 12	23 Iunij	1 23		27 Nou.	f	2 A	7 A	7	
4 Iunij		0							

A	Pent	Corpus	I	Dnic. p.	Dom. 1 ^a	Lit. Dom.	Lunæ xiiij	Pascha	D
. ecost	Domini	d	. Pent.		Adv.	(vet.)	(vet.)	(vet.)	i
.	e		.	Pent.					ff
4									.
2									
3	28	8 Iunij	1	26	3 Dec.	e	22 M	23 M	7
4	Maij		1						
4									
3									
3	19	30 Maij	1	27	1 Dec.	d c	10 A	11 A	3
4	Maij		2						5
4									
4									
3	8	19 Iunij	1	24	30 Nou.	b	30 M	3 A	7
4	Iunij		3						
4									
5									
3	24	4 Iunij	1	26	29 Nou.	A	18 A	23 A	4
4	Maij		4						2
4									
6									
3	16	27 Maij	1	27	28 Nou.	g	7 A	8 A	3
4	Maij		5						5
4									
7									

Folio 446 — next new (Gregorian) calendar leaf (A.D. 3448–3503)

A	E								
. Aur.	p								
D Nu	ac	Lit. Dom.	Plenilunia	Lunæ	Septua	Dies	Pascha	Asc	
. m.	t	(Greg.)	(D·H·mo)	xiiij	gesim	Cineru	(nov.)	ens	
.	.	.	.	.	a	m	.	io	
3	10	ij	b A	10·21·A	11 A	13	1	25	
4						Febr.	Mart.	Mai	
4								j	
8									

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
3 4 4 9	11	xi ij	g	31·6·M	31 M	28 Ian.	14 Febr.	1 A	10 Mai j
3 4 5 0	12	xx iii j	f	19·3·A	18 A	17 Febr.	6 Mart.	21 A	30 Mai j
3 4 5 1	13	v	e	8·12·A	8 A	9 Febr.	26 Febr.	13 A	22 Mai j
3 4 5 2	14	xv j	d c	27·21·M	28 M	1 Febr.	18 Febr.	4 A	13 Mai j
3 4 5 3	15	xx vi j	b	15·18·A	16 A	13 Febr.	2 Mart.	17 A	26 Mai j
3 4 5 4	16	vi ii	A	5·3·A	5 A	5 Febr.	22 Febr.	9 A	18 Mai j
3 4 5 5	17	xi x	g	25·12·M	25 M	28 Ian.	14 Febr.	1 A	10 Mai j
3 4 5 6	18	*	f e	12·10·A	13 A	17 Febr.	5 Mart.	20 A	29 Mai j
3	19	xj	d	1·18·A	2 A	1	18	5 A	14

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
4 5 7						Febr.	Febr.		Mai j
3 4 5 8	1	xx iiij	c	22·3·M	21 M	24 Ian.	10 Febr.	28 M	6 Mai j
3 4 5 9	2	iii i	b	10·1·A	9 A	6 Febr.	23 Febr.	10 A	19 Mai j
3 4 6 0	3	xv	A g	29·10·M	29 M	29 Ian.	15 Febr.	1 A	10 Mai j
3 4 6 1	4	xx vj	f	17·7·A	17 A	17 Febr.	6 Mart.	21 A	30 Mai j
3 4 6 2	5	vi j	e	6·16·A	6 A	9 Febr.	26 Febr.	13 A	22 Mai j
3 4 6 3	6	xv iiij	d	27·1·M	26 M	25 Ian.	11 Febr.	29 M	7 Mai j
3 4 6 4	7	xx ix	c b	13·22·A	14 A	14 Febr.	2 Mart.	17 A	26 Mai j
3 4	8	x	A	3·7·A	3 A	5 Febr.	22 Febr.	9 A	18 Mai

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
6 5									j
3 4 6 6	9	xx j	g	23·16·M	23 M	21 Ian.	7 Febr.	25 M	3 Mai j
3 4 6 7	10	ij	f	11·13·A	11 A	10 Febr.	27 Febr.	14 A	23 Mai j
3 4 6 8	11	xi ij	e d	30·22·M	31 M	2 Febr.	19 Febr.	5 A	14 Mai j
3 4 6 9	12	xx iii i	c	18·20·A	18 A	21 Febr.	10 Mart.	25 A	3 Iun ij
3 4 7 0	13	v	b	8·5·A	8 A	7 Febr.	24 Febr.	10 A	19 Mai j
3 4 7 1	14	xv j	A	28·13·M	28 M	29 Ian.	15 Febr.	2 A	11 Mai j
3 4 7 2	15	xx vi j	g f	15·11·A	16 A	18 Febr.	6 Mart.	21 A	30 Mai j
3 4 7	16	vi ii	e	4·20·A	5 A	3 Febr.	20 Febr.	6 A	15 Mai j

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
3									
3 4 7 4	17	xi x	d	25·5·M	25 M	25 Ian.	11 Febr.	29 M	7 Mai j
3 4 7 5	18	* c		13·2·A	13 A	14 Febr.	3 Mart.	18 A	27 Mai j
3 4 7 6	19	xj b	A	1·11·A	2 A	6 Febr.	23 Febr.	9 A	18 Mai j
3 4 7 7	1	xx iiij	g	21·20·M	21 M	21 Ian.	7 Febr.	25 M	3 Mai j
3 4 7 8	2	iii j	f	9·17·A	9 A	10 Febr.	27 Febr.	14 A	23 Mai j
3 4 7 9	3	xv e		30·2·M	29 M	26 Ian.	12 Febr.	30 M	8 Mai j
3 4 8 0	4	xx vi	d c	17·0·A	17 A	15 Febr.	3 Mart.	18 A	27 Mai j
3 4 8 1	5	vi j	b	6·8·A	6 A	6 Febr.	23 Febr.	10 A	19 Mai j

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
3 4 8 2	6	xv iiij	A	26·17·M	26 M	29 Ian.	15 Febr.	2 A	11 Mai j
3 4 8 3	7	xx ix	g	14·15·A	14 A	11 Febr.	28 Febr.	15 A	24 Mai j
3 4 8 4	8	x	f e	3·0·A	3 A	2 Febr.	19 Febr.	6 A	15 Mai j
3 4 8 5	9	xx i	d	23·8·M	23 M	25 Ian.	11 Febr.	29 M	7 Mai j
3 4 8 6	10	ij	c	11·6·A	11 A	15 Febr.	3 Mart.	18 A	27 Mai j
3 4 8 7	11	xi ij	b	31·15·M	31 M	30 Ian.	16 Febr.	3 A	12 Mai j
3 4 8 8	12	xx iii j	A g	19·12·A	18 A	19 Febr.	7 Mart.	22 A	31 Mai j
3 4 8 9	13	v	f	7·21·A	8 A	10 Febr.	27 Febr.	14 A	23 Mai j
3	14	xv	e	28·6·M	28 M	26 Ian.	12	30 M	8

A D .	Aur. Nu m.	E p ac t	Lit. Dom. (Greg.)	Plenilunia (D·H·mo)	Lunæ xiiij	Septua gesim a	Dies Cineru m	Pascha (nov.)	Asc ens io
4 9 0		i					Febr.		Mai j
3 4 9 1	15	xx vi j	d	16·4·A	16 A	15 Febr.	4 Mart.	19 A	28 Mai j
3 4 9 2	16	vi ij	c b	4·12·A	5 A	7 Febr.	24 Febr.	10 A	19 Mai j
3 4 9 3	17	xi x	A	24·21·M	25 M	22 Ian.	8 Febr.	26 M	4 Mai j
3 4 9 4	18	*	g	12·19·A	13 A	11 Febr.	28 Febr.	15 A	24 Mai j
3 4 9 5	19	xi	f	2·4·A	2 A	3 Febr.	20 Febr.	7 A	16 Mai j
3 4 9 6	1	xx iiij	e d	21·12·M	21 M	19 Ian.	5 Febr.	22 M	30 Apr .
3 4 9 7	2	iii j	c	9·10·A	9 A	7 Febr.	24 Febr.	11 A	20 Mai j
3 4	3	xv	b	29·19·M	29 M	30 Ian.	16 Febr.	3 A	12 Mai

A	E								
. Aur.	p					Septua	Dies		Asc
D Nu	ac	Lit. Dom.	Plenilunia	Lunæ	gesim	a	Cineru	Pascha	ens
. m.	t	(Greg.)	(D·H·mo)	xiiiij			m	(nov.)	io
9									j
8									
3 4	xx	A	17·16·A	17 A	19	8	23 A	1	
4	vi				Febr.	Mart.		Iun	
9								ij	
9									
3 5	vj	g	8·1·A	7 A	4	21	8 A	17	
5					Febr.	Febr.		Mai	
0								j	
0									
3 6	xv	f	27·10·M	27 M	27 Ian.	13	31 M	9	
5	ij					Febr.		Mai	
0								j	
1									
3 7	xx	e	15·7·A	15 A	16	5	20 A	29	
5	vi				Febr.	Mart.		Mai	
0	ij							j	
2									
3 8	ix	d	4·16·A	4 A	1	18	5 A	14	
5					Febr.	Febr.		Mai	
0								j	
3									

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (1600–5000), continued

Three paired leaves of the perpetual table of movable feasts, years **3448–3559**. Each opening sets the **new (Gregorian) calendar** leaf (*Calend. Greg. — Tabula Festorum*) facing the **old (Julian) calendar** leaf (*Mobilium Temporaria*, i.e. *Caput XXII*). On the old-calendar leaves the Pentecost / Corpus Christi / Sundays-after-Pentecost / First Sunday of Advent columns continue the mobile-feast sequence keyed to the **new-calendar Easter** (verified: e.g. new Easter 27 Mar 3504 + 49 days = Pentecost 15 May 3504); the three rightmost columns (Dominical letter,

Luna 14, Easter) give the **old-calendar** reckoning, and the final column gives the difference between the two Easters.

Month indicators in the Luna 14 / Easter sub-columns: **M** = March (*Martij*), **A** = April (*Aprilis*). Mean-full-moon column is **day · hour · month**. Roman/Arabic numeral forms, i-/j-terminal sorts, the cedilla dominical ç (= c), and month-abbreviation variants are transcribed as printed, not normalized.

Leaf 1 — folio 447 (old-calendar leaf, *Mobilium Temporaria*), A.D. 3448–3503

Running header: **CAPVT XXII. / MOBILIVM TEMPORARIA.** — printed folio **447**.

Columns: A.D. | Pentecost | Corpus Christi | Indict. | Sund. post Pent. | Advent I | Dom. lett. (old) | Luna 14 (old) | Easter (old) | Diff.

A. D.	Pentecos t	Corpus Christi	In d.	S.p.P.	Advent I	D.l .	Luna 14	Easte r	Di ff
34 48	4 Iunij	15 Iunij	1	25	3 Dec.	f e	27 M	30 M	7
34 49	20 Maij	31 Maij	2	27	2 Dec.	d	15 A	19 A	42
34 50	9 Iunij	20 Iunij	3	24	1 Dec.	c	4 A	11 A	14
34 51	1 Iunij	12 Iunij	4	25	30 Nou.	b	24 M	27 M	7
34 52	23 Iunij	3 Iunij	5	26	28 Nou.	A g	12 A	15 A	35
34 53	5 Iunij	16 Iunij	6	24	27 Nou.	f	1 A	7 A	14
34 54	28 Maij	8 Iunij	7	26	3 Dec.	e	21 M	23 M	7
34 55	20 Maij	31 Maij	8	27	2 Dec.	d	9 A	12 A	35
34 56	8 Iunij	19 Iunij	9	24	30 Nou.	c b	29 M	3 A	7
34 57	24 Maij	4 Iunij	10	26	29 Nou.	A	17 A	23 A	42

A. D.	Pentecos t	Corpus Christi	In d.	S.p.P.	Advent I	D.l .	Luna 14	Easte r	Di ff
34 58	16 Maij	27 Maij	11	27	28 Nou.	g	5 A	8 A	35
34 59	29 Maij	9 Iunij	12	25	27 Nou.	f	25 M	31 M	14
34 60	20 Maij	31 Maij	13	27	2 Dec.	e d	13 A	19 A	42
34 61	9 Iunij	20 Iunij	14	24	1 Dec.	c	2 A	4 A	7
34 62	1 Iunij	12 Iunij	15	25	30 Nou.	b	22 M	27 M	7
34 63	17 Maij	28 Maij	1	27	29 Nou.	A	10 A	16 A	42
34 64	5 Iunij	16 Iunij	2	24	27 Nou.	g f	30 M	31 M	7
34 65	28 Maij	8 Iunij	3	26	3 Dec.	e	18 A	20 A	35
34 66	13 Maij	24 Maij	4	28	2 Dec.	d	7 A	12 A	42
34 67	2 Iunij	13 Iunij	5	25	1 Dec.	c	27 M	28 M	7
34 68	24 Maij	4 Iunij	6	26	29 Nou.	b A	15 A	16 A	35
34 69	13 Iunij	24 Iunij	7	23	28 Nou.	g	4 A	8 A	7
34 70	29 Maij	6 Iunij	8	25	27 Nou.	f	24 M	31 M	14
34 71	21 Maij	1 Iunij	9	27	3 Dec.	e	12 A	13 A	35
34 72	9 Iunij	20 Iunij	10	24	1 Dec.	d c	1 A	4 A	7
34 73	25 Maij	5 Iunij	11	26	30 Nou.	b	21 M	27 M	14
34	17 Maij	28 Maij	12	27	29 Nou.	A	9 A	16 A	42

A. D.	Pentecos t	Corpus Christi	In d.	S.p.P.	Advent I	D.l .	Luna 14	Easte r	Di ff
34 91	7 Iunij	18 Iunij	14	24	29 Nou.	A	1 A	2 A	7
34 92	29 Maij	9 Iunij	15	25	27 Nou.	g f	21 M	24 M	7
34 93	14 Maij	25 Maij	1	28	3 Dec.	e	9 A	13 A	42
34 94	3 Iunij	14 Iunij	2	25	2 Dec.	d	29 M	5 A	14
34 95	26 Maij	6 Iunij	3	26	1 Dec.	c	17 A	18 A	35
34 96	10 Iunij	21 Iunij	4	28	29 Nou.	b A	5 A	9 A	42
34 97	30 Maij	10 Iunij	5	25	28 Nou.	g	25 M	1 A	14
34 98	22 Maij	2 Iunij	6	26	27 Nou.	f	13 A	14 A	35
34 99	11 Iunij	22 Iunij	7	24	3 Dec.	e	2 A	6 A	7
35 00	27 Maij	7 Iunij	8	26	2 Dec.	d c	22 M	28 M	14
35 01	19 Maii	30 Maij	9	27	1 Dec.	b	10 A	17 A	42
35 02	8 Iunij	19 Iunij	10	24	30 Nou.	A	30 M	2 A	7
35 03	24 Maij	4 Iunij	11	26	29 Nou.	g	18 A	22 A	42

Note: 3500 is a leap year in the Julian (old) calendar — two Dominical letters d c — but a common year in the Gregorian, which is why year 3500 does not appear on the new-calendar leaves.

Leaf 2 — folio 448 (new-calendar leaf, *Tabula Festorum*), A.D. 3504–3559

Running header: **CALEND. GREG. / TABVLA FESTORVM** — printed folio **448**.

Columns: A.D. | Golden no. (Aur. Num.) | Epact | Dom. lett. (Greg.) | Mean full moon (D · H · mo) | Luna 14 | Septuagesima | Ash Wednesday (Dies Cinerum) | Easter (new) | Ascension.

A

D .	G .	Epa .	D .l.	Mean full moon	Luna 14	Septuag.	Ash Wed.	Easter	Ascension
3504	9	xx	c	24 · 1 · M	24 M	24 Ian.	10 Febr.	27 M	5 Maij
3505	1	i	A	11 · 23 · A	12 A	12 Febr.	1 Mart.	16 A	25 Maii
3506	1	xii	g	1 · 7 · A	1 A	4 Febr.	21 Febr.	8 A	17 Maij
3507	1	xxii	f	21 · 16 · M	21 M	20 Ian.	6 Febr.	24 M	2 Maij
3508	1	iiii	e	8 · 14 · A	9 A	9 Febr.	26 Febr.	12 A	21 Maij
3509	1	xv	c	28 · 23 · M	29 M	31 Ian.	17 Febr.	4 A	13 Maij
3510	1	xxv	b	16 · 20 · A	17 A	20 Febr.	9 Mart.	24 A	2 Iunij
3511	1	vii	A	6 · 5 · A	6 A	5 Febr.	22 Febr.	9 A	18 Maij

A								
D	G Epa	D	Mean full	Lun	Septu		Eas	Ascens
.	. ct	.l.	moon	a 14	ag.	Ash Wed.	ter	ion
1								
1								
3	1 xvii	g	25 · 14 · M	26 M	28	14 Febr.	31	9 Maij
5	7 i	f			Ian.		M	
1								
2								
3	1 xxi	e	13 · 11 · A	14 A	16	5 Mart.	20	29
5	8 x				Febr.		A	Maij
1								
3								
3	1 x	d	2 · 20 · A	3 A	1	18 Febr.	5 A	14
5	9				Febr.			Maij
1								
4								
3	1 xxii	c	23 · 5 · M	22 M	24	10 Febr.	28	6 Maij
5					Ian.		M	
1								
5								
3	2 iii	b	10 · 2 · A	10 A	13	1 Mart.	16	25
5		A			Febr.		A	Maij
1								
6								
3	3 xiiii	g	30 · 11 · M	30 M	28	14 Febr.	1 A	10
5					Ian.			Maij
1								
7								
3	4 xxv	f	18 · 9 · A	18 A	17	6 Febr. [recte: 6	21	30
5					Febr.	Mart.]	A	Maij
1								
8								
3	5 vj	e	7 · 18 · A	7 A	9	26 Febr.	13	22
5					Febr.		A	Maij
1								

A								
D	G Epa	D	Mean full	Lun	Septu		Eas	Ascens
.	. ct	.l.	moon	a 14	ag.	Ash Wed.	ter	ion
9								
3	6 xvii	d	27 · 2 · M	27 M	25	11 Febr.	28	6 Maij
5		c			Ian.		M	
2								
0								
3	7 xxv	b	15 · 0 · A	15 A	13	2 Mart.	17	26
5	iii				Febr.		A	Maij
2								
1								
3	8 ix	A	4 · 9 · A	4 A	5	22 Febr.	9 A	18
5					Febr.			Maij
2								
2								
3	9 xx	g	24 · 18 · M	24 M	21	7 Febr.	25	3 Maij
5					Ian.		M	
2								
3								
3	1 j	f	11 · 15 · A	12 A	10	27 Febr.	13	22
5	0	e			Febr.		A	Maij
2								
4								
3	1 xii	d	1 · 0 · A	1 A	1	18 Febr.	5 A	14
5	1				Febr.			Maij
2								
5								
3	1 xxii	c	21 · 9 · A	21 M	24	10 Febr.	28	6 Maij
5	2 i				Ian.		M	
2								
6								
3	1 iiiii	b	9 · 6 · A	9 A	6	23 Febr.	10	19
5	3				Febr.		A	Maij
2								
7								

A

D .	G Epa . ct	D .l.	Mean full moon	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
3 5 2 8	1 xv 4	A g	28 · 15 · M	29 M	29 Ian.	15 Febr.	1 A	10 Maij
3 5 2 9	1 xxv 5 i	f	16 · 13 · A	17 A	17 Febr.	6 Mart.	21 A	30 Maij
3 5 3 0	1 vii 6	e	5 · 21 · A	6 A	9 Febr.	26 Febr.	13 A	22 Maij
3 5 3 1	1 xvii 7 i	d	26 · 6 · M	26 M	25 Ian.	11 Febr.	29 M	7 Maij
3 5 3 2	1 xxi 8 x	c b	13 · 4 · A	14 A	14 Febr.	2 Mart.	17 A	26 Maij
3 5 3 3	1 x 9	A	2 · 13 · A	3 A	5 Febr.	22 Febr.	9 A	18 Maij
3 5 3 4	1 xxii	g	22 · 21 · M	22 M	21 Ian.	7 Febr.	25 M	3 Maij
3 5 3 5	2 iii	f	10 · 19 · A	10 A	10 Febr.	27 Febr.	14 A	23 Maij
3	3 xiiii	e	30 · 4 · M	30 M	2	19 Febr.	5 A	14

A								
.								
D	G Epa	D	Mean full	Lun	Septu		Eas	Ascens
.	. ct	.l.	moon	a 14	ag.	Ash Wed.	ter	ion
5		d			Febr.			Maij
3								
6								
3	4 xxv	c	18 · 1 · A	18 A	21	10 Mart.	25	3 Iunij
5					Febr.		A	
3								
7								
3	5 vi	b	7 · 10 · A	7 A	6	23 Febr.	10	19
5					Febr.		A	Maij
3								
8								
3	6 xvii	A	27 · 19 · M	27 M	29	15 Febr.	2 A	11
5					Ian.			Maij
3								
9								
3	7 xxv	g	14 · 16 · A	15 A	18	6 Mart.	21	30
5	iii	f			Febr.		A	Maij
4								
0								
3	8 ix	e	4 · 1 · A	4 A	2	19 Febr.	6 A	15
5					Febr.			Maij
4								
1								
3	9 xx	d	24 · 10 · M	24 M	25	11 Febr.	29	7 Maij
5					Ian.		M	
4								
2								
3	1 j	c	12 · 8 · A	12 A	14	3 Mart.	18	27
5	0				Febr.		A	Maij
4								
3								
3	1 xii	b	31 · 16 · M	1 A	30	16 Febr.	2 A	11
5	1	A			Ian.			Maij

A								
D	G Epa	D	Mean full	Lun	Septu		Eas	Ascens
.	. ct	.l.	moon	a 14	ag.	Ash Wed.	ter	ion
4								
4								
3	1 xxii	g	21 · 1 · M	21 M	21	7 Febr.	25	3 Maij
5	2 i				Ian.		M	
4								
5								
3	1 iiij	f	8 · 23 · A	9 A	10	27 Febr.	14	23
5	3				Febr.		A	Maij
4								
6								
3	1 xv	e	29 · 8 · M	29 M	26	12 Febr.	30	8 Maij
5	4				Ian.		M	
4								
7								
3	1 xxv	d	16 · 5 · A	17 A	15	3 Mart.	18	27
5	5 i	c			Febr.		A	Maij
4								
8								
3	1 vii	b	5 · 14 · A	6 A	6	23 Febr.	10	19
5	6				Febr.		A	Maij
4								
9								
3	1 xvii	A	25 · 23 · M	26 M	29	15 Febr.	2 A	11
5	7 i				Ian.			Maij
5								
0								
3	1 xxi	g	13 · 20 · A	14 A	11	28 Febr.	15	24
5	8 x				Febr.		A	Maij
5								
1								
3	1 x	f	3 · 5 · A	3 A	3	20 Febr.	6 A	15
5	9	e			Febr.			Maij
5								

A

D . .	G Epa . .	D .l.	Mean full moon	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
2								
3 5 5 3	1 xxii	d	22 · 14 · M	22 M	25 Ian.	11 Febr.	29 M	7 Maij
3 5 5 4	2 iiij	c	10 · 11 · A	10 A	7 Febr.	24 Febr.	11 A	20 Maij
3 5 5 5	3 xiiij	b	30 · 20 · M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
3 5 5 6	4 xxv	A g	17 · 18 · A	18 A	19 Febr.	7 Mart.	22 A	31 Maij
3 5 5 7	5 vi	f	7 · 3 · A	7 A	10 Febr.	27 Febr.	14 A	23 Maij
3 5 5 8	6 xvij	e	27 · 11 · M	27 M	26 Ian.	12 Febr.	30 M	8 Maij
3 5 5 9	7 xxv iii	d	15 · 9 · A	15 A	15 Febr.	4 Mart.	19 A	28 Maij

Leaf 3 — folio 449 (old-calendar leaf, *Mobilium Temporaria*), A.D. 3504–3559

Running header: **CAPVT XXII. / MOBILIVM TEMPORARIA.** — printed folio **449.**

Columns: A.D. | Pentecost | Corpus Christi | Indict. | Sund. post Pent. | Advent I |
Dom. lett. (old) | Luna 14 (old) | Easter (old) | Diff.

A. D.	Pentec ost	Corpus Christi	In d.	S.p. P.	Adven t I	D. l.	Luna 14	East er	Di ff
35 04	15 Maij	26 Maij	12	27	27 Nou.	f e	7 A	13 A	42
35 05	4 Iunij	15 Iunij	13	25	3 Dec.	d	27 M	29 M	7
35 06	27 Maij	7 Iunij	14	26	2 Dec.	c	15 A	18 A	35
35 07	12 Maij	23 Maij	15	28	1 Dec.	b	4 A	10 A	42
35 08	31 Maij	11 Iunij	1	25	29 Nou.	A g	24 M	25 M	7
35 09	23 Maij	3 Iunij	2	26	28 Nou.	f	12 A	14 A	35
35 10	12 Iunij	23 Iunij	3	23	27 Nou.	e	1 A	6 A	7
35 11	28 Maij	8 Iunij	4	26	3 Dec.	d	21 M	22 M	7
35 12	19 Maij	30 Maij	5	27	1 Dec.	ç b	9 A	10 A	35
35 13	8 Iunij	19 Iunij	6	24	30 Nou.	A	29 M	2 A	7
35 14	24 Maij	4 Iunij	7	26	29 Nou.	g	17 A	22 A	42
35 15	16 Maij	27 Maij	8	27	28 Nou.	f	5 A	7 A	35
35 16	4 Iunij	15 Iunij	9	25	3 Dec.	e d	25 M	29 M	7
35	20 Maij	31 Maij	10	27	2 Dec.	c	13 A	18 A	42

A. D.	Pentec ost	Corpus Christi	In d.	S.p. P.	Adven t I	D. l.	Luna 14	East er	Di ff
17									
35 18	9 Iunij	20 Iunij	11	24	1 Dec.	b	2 A	3 A	7
35 19	1 Iunij	12 Iunij	12	25	30 Nou.	A	22 M	26 M	7
35 20	16 Maij	27 Maij	13	27	28 Nou.	g f	10 A	14 A	42
35 21	5 Iunij	16 Iunij	14	24	27 Nou.	e	30 M	6 A	14
35 22	28 Maij	8 Iunij	15	26	3 Dec.	d	18 A	19 A	35
35 23	13 Maij	24 Maij	1	28	2 Dec.	c	7 A	11 A	42
35 24	1 Iunij	12 Iunij	2	25	30 Nou.	b A	27 M	2 A	14
35 25	24 Maij	4 Iunij	3	26	29 Nou.	g	15 A	22 A	42
35 26	16 Maij	27 Maij	4	27	28 Nou.	f	4 A	7 A	35
35 27	29 Maij	9 Iunij	5	25	27 Nou.	e	24 M	30 M	14
35 28	20 Maij	31 Maij	6	27	2 Dec.	d c	12 A	18 A	42
35 29	9 Iunij	20 Iunij	7	24	1 Dec.	b	1 A	3 A	7
35 30	1 Iunij	12 Iunij	8	25	30 Nou.	A	21 M	26 M	7
35 31	17 Maij	28 Maij	9	27	29 Nou.	g	9 A	15 A	42
35 32	5 Iunij	16 Iunij	10	24	27 Nou.	f e	29 M	30 M	7
35 33	28 Maij	8 Iunij	11	26	3 Dec.	d	17 A	19 A	35

A. D.	Pentec ost	Corpus Christi	In d.	S.p. P.	Adven t I	D. l.	Luna 14	East er	Di ff
35 34	13 Maij	24 Maij	12	28	2 Dec.	c	5 A	11 A	42
35 35	2 Iunij	13 Iunij	13	25	1 Dec.	b	25 M	27 M	7
35 36	24 Maij	4 Iunij	14	26	29 Nou.	A g	13 A	15 A	35
35 37	13 Iunij	24 Iunij	15	23	28 Nou.	f	2 A	7 A	7
35 38	29 Maij	9 Iunij	1	25	27 Nou.	e	22 M	23 M	7
35 39	21 Maij	1 Iunij	2	27	3 Dec.	d	10 A	12 A	35
35 40	9 Iunij	20 Iunij	3	24	1 Dec.	c b	30 M	3 A	7
35 41	25 Maij	5 Iunij	4	26	30 Nou.	A	18 A	23 A	42
35 42	17 Maij	28 Maij	5	27	29 Nou.	g	7 A	8 A	35
35 43	6 Iunij	17 Iunij	6	24	28 Nou.	f	27 M	31 M	7
35 44	21 Maij	1 Iunij	7	27	3 Dec.	e d	15 A	19 A	42
35 45	13 Maij	24 Maij	8	28	2 Dec.	c	4 A	11 A	42
35 46	2 Iunij	13 Iunij	9	25	1 Dec.	b	24 M	27 M	7
35 47	18 Maij	29 Maij	10	27	30 Nou.	A	12 A	16 A	42
35 48	6 Iunij	17 Maij [recte: 17 Iunij]	11	24	28 Nou.	g f	1 A	7 A	14
35 49	29 Maij	9 Iunij	12	25	27 Nou.	e	21 M	23 M	7
35	21 Maij	1 Iunij	13	27	3 Dec.	d	9 A	12 A	35

A. D.	Pentec ost	Corpus Christi	In d.	S.p. P.	Adven t I	D. l.	Luna 14	East er	Di ff
50									
35 51	3 Iunij	14 Iunij	14	25	2 Dec.	c	29 M	4 A	14
35 52	25 Maij	5 Iunij	15	26	30 Nou.	b A	17 A	23 A	42
35 53	17 Maij	28 Maij	1	27	29 Nou.	g	5 A	8 A	35
35 54	30 Maij	10 Iunij	2	25	28 Nou.	f	25 M	31 M	14
35 55	22 Maij	2 Iunij	3	26	27 Nou.	e	13 A	20 A	42
35 56	10 Iunij	21 Maij	4	24	2 Dec.	d c	2 A	4 A	7
35 57	2 Iunij	13 Iunij	5	25	1 Dec.	b	22 M	27 M	7
35 58	18 Maij	29 Maij	6	27	30 Nou.	A	10 A	16 A	42
35 59	7 Iunij	18 Iunij	7	24	29 Nou.	g	30 M	1 A	7

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The paired new-calendar (Gregorian) and old-calendar (*veteris*) leaves of the *Temporary Table of the Movable Feasts* continue, running here from A.D. 3560 to A.D. 3671. The Gregorian leaf (printed p. 450) and its facing old-calendar leaf (printed p. 451) together cover A.D. 3560–3615; the next Gregorian leaf (printed p. 452) covers A.D. 3616–3671. In every column the month of the mean full moon, of Luna 14, and of Easter is given by a single letter, A = *Aprilis* (April) and M = *Martius* (March). Leap years carry two Dominical letters.

New-calendar leaf — A.D. 3560–3615 (printed p. 450)

Columns: **Anni Domini** (year of the Lord) · **Aur. Num.** (golden number) · **Epactæ** (epact) · **Lit. Dñicales Calend. Greg.** (Dominical letters of the Gregorian calendar; two in leap years) · **Plenilunia media Cal. Gregor.** (mean full moons of the Gregorian calendar: D. = day, H. = hour, followed by the month letter) · **Lunæ xiiij. Calendarij Gregoriani** (14th of the moon, Gregorian; day + month) · **Septuagesima** · **Dies Cinerum** (Ash Wednesday) · **Pascha Calend. noui** (Easter of the new calendar; day + month) · **Ascensio Domini** (Ascension).

Anni Domini	Aur. Num.	Epactæ	Lit. Dom.	Plenilunium (D. H. mo.)	Luna 14	Septuagesima	Dies Cinerum	Pascha nov.	Ascensio Domini
3560	8	ix	c b	3. 18 A	4 A	7 Feb.	24 Feb.	10 A	19 Maij
3561	9	xx	A	24. 3 M	24 M	22 Ian.	8 Feb.	26 M	4 Maij
3462 [recte: 3562]	10	j	g	12. 0 A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
3563	11	xij	f	1. 9 A	1 A	3 Feb.	20 Feb.	7 A	16 Maij
3564	12	xx iij	e d	20. 18 M	21 M	19 Ian.	5 Feb.	22 M	30 Apr
3565	13	iii j	c	8. 15 A	9 A	7 Feb.	24 Feb.	11 A	20 Maij
3566	14	xv	b	29. 0 M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
3567	15	xx vi	A	16. 22 A	17 A	19 Feb.	8 Mar.	23 A	1 Iunij
3568	16	vii	g f	5. 6 A	6 A	4 Feb.	21 Feb.	7 A	16 Maij
3569	17	xv iii	e	25. 15 M	26 M	26 Ian.	12 Feb.	30 M	8 Maij
3570	18	xx ix	d	13. 13 A	14 A	15 Feb.	4 Mar.	19 A	28 Maij

Anni Domini	Aur Nu m.	Ep ac tæ	Lit. Do m.	Plenilunium (D. H. mo.)	L u na 14	Septu agesi ma	Dies Ciner um	Pasc ha nov.	Ascensio Domini
3571	19	x	c	2. 22 A	3 A	31 Ian.	17 Feb.	4 A	13 Maij
3572	1	xx ii	b A	22. 6 M	22 M	23 Ian.	9 Feb.	26 M	4 Maij
3573	2	ijj	g	10. 4 A	10 A	11 Feb.	28 Feb.	15 A	24 Maij
3574	3	xii ij	f	30. 13 M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
3575	4	xx v	e	18. 10 A	18 A	16 Feb.	5 Mar.	20 A	29 Maij
3576	5	vj	d c	6. 19 A	7 A	8 Feb.	25 Feb.	11 A	20 Maij
3577	6	xv ij	b	27. 4 M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
3578	7	xx vii j	A	15. 2 A	15 A	12 Feb.	1 Mar.	16 A	15 Maij [recte: 25]
3579	8	ix	g	4. 10 A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
3580	9	xx	f e	23. 19 M	24 M	27 Ian.	13 Feb.	30 M	8 Maij
3581	10	j	d	11. 17 A	12 A	15 Feb.	4 Mar.	19 A	28 Maij
3582	11	xij	c	1. 2 A	1 A	31 Ian.	17 Feb.	4 A	13 Maij
3583	12	xx ijj	b	21. 10 M	21 M	23 Ian.	9 Feb.	27 M	5 Maij
3584	13	iii i	A g	8. 8 A	9 A	12 Feb.	29 Feb.	15 A	24 Maij
3585	14	xv	f	28. 17 M	29 M	27 Ian.	13 Feb.	31 M	9 Maij
3586	15	xx	e	16. 14 A	17	16	5	20 A	29 Maij

Anni Domini	Aur Nu m.	Ep ac tæ	Lit. Do m.	Plenilunium (D. H. mo.)	L u na 14	Septu agesi ma	Dies Ciner um	Pasc ha nov.	Ascensio Domini
		vj			A	Feb.	Mar.		
3587	16	vij	d	5. 23 A	6 A	8 Feb.	25 Feb.	12 A	21 Maij
3588	17	xv ij	c b	25. 8 M	26 M	24 Ian.	10 Feb.	27 M	5 Maij
3589	18	xx ix	A	13. 5 A	14 A	12 Feb.	1 Mar.	16 A	25 Maij
3590	19	x	g	2. 14 A	3 A	4 Feb.	21 Feb.	8 A	17 Maij
3591	1	xx ij	f	22. 23 M	22 M	20 Ian.	6 Feb.	24 M	2 Maij
3592	2	ijj	e d	9. 21 A	10 A	9 Feb.	26 Feb.	12 A	21 Maij
3593	3	xii ij	c	30. 5 M	30 M	31 Ian.	17 Feb.	4 A	13 Maij
3594	4	xx v	b	18. 3 A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
3595	5	vi	A	7. 12 A	7 A	5 Feb.	22 Feb.	9 A	18 Maij
3596	6	xv ij	g f	26. 21 M	27 M	28 Ian.	14 Feb.	31 M	9 Maij
3597	7	xx vii j	e	14. 18 A	15 A	16 Feb.	5 Mar.	20 A	29 Maij
3598	8	ix	d	4. 3 A	4 A	1 Feb.	18 Feb.	5 A	14 Maij
3599	9	xx	c	24. 12 M	24 M	24 Ian.	10 Feb.	28 M	6 Maij
3600	10	ij	b A	11. 9 A	11 A	13 Feb.	1 Mar.	16 A	25 Maij
3601	11	xii	g	31. 12 M	31	28	14	1 A	10 Maij

Anni Domini	Aur Nu m.	Ep ac tæ	Lit. Do m.	Plenilunium (D. H. mo.)	L u na 14	Septu agesi ma	Dies Ciner um	Pasc ha nov.	Ascensio Domini
		j			M	Ian.	Feb.		
3602	12	xx iii i	f	19. 16 A	18 A	17 Feb.	6 Mar.	21 A	30 Maij
3603	13	v	e	9. 0 A	8 A	9 Feb.	26 Feb.	13 A	22 Maij
3604	14	xv j	d c	28. 9 M	28 M	1 Feb.	18 Feb.	4 A	13 Maij
3605	15	xx vij	b	16. 7 A	16 A	13 Feb.	2 Mar.	17 A	26 Maij
3606	16	vii i	A	5. 16 A	5 A	5 Feb.	22 Feb.	9 A	18 Maij
3607	17	xi x	g	26. 0 M	25 M	28 Ian.	14 Feb.	1 A	10 Maij
3608	18	*	f e	12. 22 A	13 A	17 Feb.	5 Mar.	20 A	29 Maij
3609	19	xj	d	2. 7 A	2 A	1 Feb.	18 Feb.	5 A	14 Maij
3610	1	xx ijj	c	22. 16 M	21 M	24 Ian.	10 Feb.	28 M	6 Maij
3611	2	iii j	b	10. 13 A	9 A	6 Feb.	23 Feb.	10 A	19 Maij
3612	3	xv	A g	29. 22 M	29 M	29 Ian.	15 Feb.	1 A	10 Maij
3613	4	xx vi	f	17. 19 A	17 A	17 Feb.	6 Mar.	21 A	30 Maij
3614	5	vii	e	7. 4 A	6 A	9 Feb.	26 Feb.	13 A	22 Maij
3615	6	xv ijj	d	27. 13 M	26 M	25 Ian.	11 Feb.	29 M	7 Maij

Old-calendar leaf — A.D. 3560–3615 (printed p. 451)

This is the facing leaf for the same years. Its first columns continue the new-calendar feasts (Pentecost, Corpus Christi, indiction, Sundays after Pentecost, First Sunday of Advent); the last columns give the corresponding **old-calendar** (Julian) figures. Columns: **Anni Domini** · **Pentecoste** (Pentecost) · **Corpus Domini** (Corpus Christi) · **Indictio** (indiction) · **Dñicæ post Pentecosten** (Sundays after Pentecost) · **Dominica prima Aduentus** (First Sunday of Advent; day + Nov./Dec.) · **Literæ Domini Calend. veteris** (Dominical letters of the old calendar; two in leap years) · **Lunæ xiiij. Calend. veteris** (14th of the moon, old calendar; day + month) · **Pascha Calend. veteris** (Easter of the old calendar; day + month) · **Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt** (days by which new-calendar Easter differs from old-calendar Easter).

Anni Domini	Pentecoste	Corpus Domini	Indictio	Dñicæ post Pent.	Dom. I Aduentus	Lit. vet.	Luna 14 vet.	Pascha vet.	D i ff .
3560	29 Maij	9 Iunij	8	25	27 Nou.	f e	18 A	20 A	35
3561	14 Maij	25 Maij	9	28	3 Dec.	d	7 A	12 A	42
3562	3 Iunij	14 Iunij	10	25	2 Dec.	c	27 M	28 M	7
3563	26 Maij	6 Iunij	11	26	1 Dec.	b	15 A	17 A	35
3564	10 Maij	21 Maij	12	28	29 Nou.	A g	4 A	8 A	42
3565	30 Maij	10 Iunij	13	25	28 Nou.	f	24 M	31 M	14
3566	22 Maij	2 Iunij	14	26	27 Nou.	e	12 A	13 A	35
3567	11 Iunij	22 Iunij	15	24	3 Dec.	d	1 A	5 A	7
3568	26 Maij	6 Iunij	1	26	1 Dec.	c b	21 M	27 M	14
3569	18	29 Maij	2	27	30 Nou.	A	9 A	16 A	4

Anni Domi ni	Pent ecost e	Corpus Domini	Ind icti o	Dñicæ post Pent.	Dom. I Aduentu s	Lit. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
	Maij								2
3570	7 Iunij	18 Iunij	3	24	29 Nou.	g	29 M	1 A	7
3571	23 Maij	3 Iunij	4	26	28 Nou.	f	17 A	21 A	4 2
3572	14 Maij	25 Maij	5	28	3 Dec.	e d	5 A	12 A	4 2
3573	3 Iunij	14 Iunij	6	25	2 Dec.	c	25 M	28 M	7
3574	19 Maij	30 Maij	7	27	1 Dec.	b	13 A	17 A	4 2
3575	8 Iunij	19 Iunij	8	24	30 Nou.	A	2 A	9 A	1 4
3576	30 Maij	10 Iunij	9	25	28 Nou.	g f	22 M	24 M	7
3577	22 Maij	2 Iunij	10	26	27 Nou.	e	10 A	13 A	3 5
3578	4 Iunij	15 Iunij	11	25	3 Dec.	d	30 M	5 A	1 4
3579	27 Maij	7 Iunij	12	26	2 Dec.	c	18 A	25 M	4 2
3580	18 Maij	29 Maij	13	27	30 Nou.	b A	7 A	9 A	3 5
3581	7 Iunij	18 Iunij	14	24	29 Nou.	g	27 M	1 A	7
3582	23 Maij	3 Iunij	15	26	28 Nou.	f	15 A	21 A	4 2
3583	15 Maij	26 Maij	1	27	27 Nou.	e	4 A	6 A	3 5
3584	3 Iunij	14 Iunij	2	25	2 Dec.	d c	24 M	28 M	7

Anni Domi ni	Pent ecost e	Corpus Domini	Ind icti o	Dñicæ post Pent.	Dom. I Aduentu s	Lit. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
3585	19 Maij	30 Maij	3	27	1 Dec.	b	12 A	17 A	4 2
3586	8 Iunij	19 Iunij	4	24	30 Nou.	A	1 A	2 A	7
3587	31 Maij	11 Iunij	5	25	29 Nou.	g	21 M	25 M	7
3588	15 Maij	26 Maij	6	28	3 Dec.	f e	9 A	13 A	4 2
3589	4 Iunij	15 Iunij	7	25	2 Dec.	d	29 M	5 A	1 4
3590	27 Maij	7 Iunij	8	26	1 Dec.	c	17 A	18 A	3 5
3591	12 Maij	23 Maij	9	28	3 Dec.	b	5 A	10 A	4 2
3592	31 Maij	11 Iunij	10	25	2 Dec.	A g	25 M	1 A	1 4
3593	23 Maij	3 Iunij	11	26	1 Dec.	f	13 A	14 A	3 5
3594	12 Iunij	23 Iunij	12	23	28 Nou.	e	2 A	6 A	7
3595	28 Maij	8 Iunij	13	26	3 Dec.	d	22 M	29 M	1 4
3596	19 Maij	30 Maij	14	27	2 Dec.	c b	10 A	17 A	4 2
3597	8 Iunij	19 Iunij	15	24	30 Nou.	A	30 M	2 A	7
3598	24 Maij	4 Iunij	1	26	29 Nou.	g	18 A	22 A	4 2
3599	16 Maij	27 Maij	2	27	28 Nou.	f	7 A	14 A	4 2
3600	4	15	3	25	3 Dec.	e d	27 M	29 M	7

Anni Domi ni	Pent ecost e	Corpus Domini	Ind icti o	Dñicæ post Pent.	Dom. I Aduentu s	Lit. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
	Iunij	Iunij							
3601	20 Maij	31 Maij	4	27	2 Dec.	c	15 A	18 A	4 2
3602	9 Iunij	20 Iunij	5	24	1 Dec.	b	4 A	10 A	1 4
3603	1 Iunij	12 Iunij	6	25	30 Nou.	A	24 M	26 M	7
3604	23 Maij	3 Iunij	7	26	28 Nou.	g f	12 A	14 A	3 5
3605	5 Iunij	16 Iunij	8	24	27 Nou.	e	1 A	6 A	1 4
3606	28 Maij	8 Iunij	9	26	3 Dec.	d	21 M	22 M	7
3607	20 Maij	31 Maij	10	27	2 Dec.	c	9 A	11 A	3 5
3608	8 Iunij	19 Iunij	11	24	30 Nou.	b A	29 M	2 A	7
3609	24 Maij	4 Iunij	12	26	29 Nou.	g	17 A	22 A	4 2
3610	16 Maij	27 Maij	13	27	28 Nou.	f	5 A	7 A	3 5
3611	29 Maij	9 Iunij	14	25	27 Nou.	e	25 M	30 M	1 4
3612	20 Maij	31 Maij	15	27	2 Dec.	d c	13 A	18 A	4 2
3613	9 Iunij	20 Iunij	1	24	1 Dec.	b	2 A	3 A	7
3614	1 Iunij	12 Iunij	2	25	30 Nou.	A	22 M	26 M	7
3615	17 Maij	28 Maij	3	27	29 Nou.	g	10 A	15 A	4 2

New-calendar leaf — A.D. 3616–3671 (printed p. 452)

The next Gregorian leaf, with the same columns as p. 450 (**Anni Domini · Aur. Num. · Epactæ · Lit. Dñicales Calend. Greg. · Plenilunia media Cal. Gregor.** [D. H. + month] · **Lunæ xiiij. Calendarij Gregoriani · Septuagesima · Dies Cinerum · Pascha Calend. noui · Ascensio Domini**).

Anni Domini	Aur. Num.	Epactæ	Lit. Dom.	Plenilunium (D. H. mo.)	Lu na 14	Septu agesi ma	Dies Cinerum	Pascha nov.	Ascensio Domini
3616	7	xxix	c b	14. 11 A	14 A	14 Feb.	2 Mar.	17 A	26 Maij
3617	8	x	A	3. 19 A	3 A	5 Feb.	22 Feb.	9 A	18 Maij
3618	9	xxi	g	24. 4 M	23 M	21 Ian.	7 Feb.	25 M	3 Maij
3619	10	ii	f	12. 2 A	11 A	10 Feb.	27 Feb.	14 A	23 Maij
3620	11	xii	e d	31. 11 M	31 M	2 Feb.	19 Feb.	5 A	14 Maij
3621	12	xxiii	c	19. 8 A	18 A	21 Feb.	10 Mar.	25 A	3 Iunij
3622	13	v	b	8. 17 A	8 A	6 Feb.	23 Feb.	10 A	19 Maij
3623	14	xvj	A	29. 2 M	28 M	29 Ian.	15 Feb.	2 A	11 Maij
3624	15	xxvij	g f	15. 23 A	16 A	18 Feb.	6 Mar.	21 A	30 Maij
3625	16	viii	e	5. 8 A	5 A	2 Feb.	19 Feb.	6 A	15 Maij
3626	17	xi	d	25. 17 M	25 M	25 Ian.	11 Feb.	29 M	7 Maij
3627	18	*	c	13. 14 A	13 A	14 Feb.	3 Mar.	18 A	27 Maij
3628	19	xj	b A	1. 23 A	2	6 Feb.	23 Feb.	9 A	18 Maij

Anni Dom ini	Aur Nu m.	Ep ac tæ	Lit. Do m.	Plenilunium (D. H. mo.)	Lu na 14	Septu agesi ma	Dies Cinerum	Pasc ha nov.	Ascensi o Domini
					A				
3629	1	xx iiij	g	22. 8 M	21 M	21 Ian.	7 Feb.	25 M	3 Maij
3630	2	iiiij	f	10. 6 A	9 A	10 Feb.	27 Feb.	14 A	23 Maij
3631	3	xv	e	30. 14 M	29 M	26 Ian.	12 Feb.	30 M	8 Maij
3632	4	xx vj	d c	17. 12 A	17 A	15 Feb.	3 Mar.	18 A	27 Maij
3633	5	vij	b	6. 21 A	6 A	6 Feb.	23 Feb.	10 A	19 Maij
3634	6	xv iiij	A	27. 6 M	26 M	29 Ian.	15 Feb.	2 A	11 Maij
3635	7	xx ix	g	15. 3 A	14 A	11 Feb.	28 Feb.	15 A	24 Maij
3636	8	x	f e	3. 12 A	3 A	3 Feb.	20 Feb.	6 A	15 Maij
3637	9	xx i	d	23. 21 M	23 M	25 Ian.	11 Feb.	29 M	7 Maij
3638	10	ij	c	11. 18 A	11 A	14 Feb.	3 Mar.	18 A	27 Maij
3639	11	xii j	b	1. 3 A	31 M	30 Ian.	16 Feb.	3 A	12 Maij
3640	12	xx iii i	A g	19. 1 A	18 A	19 Feb.	7 Mar.	22 A	31 Maij
3641	13	v	f	8. 9 A	8 A	10 Feb.	27 Feb.	14 A	23 Maij
3642	14	xv j	e	28. 18 M	28 M	26 Ian.	12 Feb.	30 M	8 Maij
3643	15	xx	d	16. 16 A	16	15	4 Mar.	19 A	28 Maij

Anni Dom ini	Aur Nu m.	Ep ac tæ	Lit. Do m.	Plenilunium (D. H. mo.)	Lu na 14	Septu agesi ma	Dies Cinerum	Pasc ha nov.	Ascensi o Domini
		vij			A	Feb.			
3644	16	vii i	c b	5. 1 A	5 A	7 Feb.	24 Feb.	10 A	19 Maij
3645	17	xi x	A	25. 9 M	25 M	22 Ian.	8 Mar. [recte: 8 Feb.]	26 M	4 Maij
3646	18	*	g	13. 7 A	13 A	11 Feb.	28 Feb.	15 A	24 Maij
3647	19	xj	f	2. 16 A	2 A	3 Feb.	20 Feb.	7 A	16 Maij
3648	1	xx iij	e d	22. 1 M	21 M	19 Ian.	5 Feb.	22 M	30 Apr
3649	2	iiij	c	9. 22 A	9 A	7 Feb.	24 Feb.	11 A	20 Maij
3650	3	xv	b	30. 7 M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
3651	4	xx vi	A	18. 5 A	17 A	19 Feb.	8 Mar.	23 A	1 Iunij
3652	5	vii	g f	6. 13 A	6 A	4 Feb.	21 Feb.	7 A	16 Maij
3653	6	xv iij	e	26. 22 M	26 M	26 Ian.	12 Feb.	30 M	8 Maij
3654	7	xx ix	d	14. 20 A	14 A	15 Feb.	4 Mar.	19 A	28 Maij
3655	8	x	c	4. 4 A	3 A	31 Ian.	17 Feb.	4 A	13 Maij
3656	9	xx i	b A	23. 13 M	23 M	23 Ian.	9 Feb.	26 M	4 Maij
3657	10	ij	g	11. 11 A	11 A	11 Feb.	28 Feb.	15 A	24 Maij
3658	11	xii	f	31. 20 M	31	3 Feb.	20 Feb.	7 A	16 Maij

Anni Dom ini	Aur Nu m.	Ep ac tæ	Lit. Do m.	Plenilunium (D. H. mo.)	Lu na 14	Septu agesi ma	Dies Cinerum	Pasc ha nov.	Ascensi o Domini
		j			M				
3659	12	xx iii i	e	19. 17 A	18 A	16 Feb.	5 Mar.	20 A	29 Maij
3660	13	v	d c	8. 2 A	8 A	8 Feb.	25 Feb.	11 A	20 Maij
3661	14	xv j	b	28. 11 M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
3662	15	xx vij	A	16. 8 A	16 A	19 Feb.	8 Mar.	23 A	1 Iunij
3663	16	vii i	g	5. 17 A	5 A	4 Feb.	21 Feb.	8 A	17 Maij
3664	17	xi x	f e	25. 2 M	25 M	27 Ian.	13 Feb.	30 M	8 Maij
3665	18	*	d	13. 0 A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
3666	19	xj	c	2. 8 A	2 A	31 Ian.	17 Feb.	4 A	13 Maij
3667	1	xx iiij	b	22. 17 M	21 M	23 Ian.	9 Feb.	27 M	5 Maij
3668	2	iiij	A g	9. 15 A	9 A	12 Feb.	1 Mar.	15 A	24 Maij
3669	3	xv	f	29. 23 M	29 M	27 Ian.	13 Feb.	31 M	9 Maij
3670	4	xx vi	e	17. 21 A	17 A	16 Feb.	5 Mar.	20 A	29 Maij
3671	5	vii	d	7. 6 A	7 A	8 Feb.	25 Feb.	12 A	21 Maij

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (1600–5000), continued

These three leaves continue the great table of the movable feasts, paired new-calendar (Gregorian) and old-calendar (*veteris*) leaves. This opening covers A.D. 3616–3671 on the old-calendar side (folio 453) and A.D. 3672–3727 on both the new-calendar (folio 454) and old-calendar (folio 455) sides.

In the date columns, the single letters after a day-number give the month: **M** = **Martius (March)**, **A** = **Aprilis (April)**; **Nou.** = **November**, **Dec.** = **December**; **Maij/Iunij** = **May/June**. In the *Plenilunia media* column the entry is **day · hour**, followed by the M/A month-letter of that mean full moon.

Folio 453 — old calendar (*Calendarium vetus*), A.D. 3616–3671

Running head: CAPVT XXII. — MOBILIVM TEMPORARIA.

Columns: A.D. | Pentecost | Corpus Christi | Indiction | Sundays after Pentecost | First Sunday of Advent | Dominical letter(s), old cal. | Luna 14, old cal. | Easter, old cal. | Diff. (days by which the new-calendar Easter differs from the old-calendar Easter)

A			I		1st				D
.			n		Adv	Dom.			i
D	Pent	Corpus	d	Sund. aft.	.	lett.	Luna 14	Easter	ff.
.	ecost	Christi	.	Pent.	.				
3	5	16 Iunij	4	24	27	f e	30 M	6 A	1
6	Iunij				Nou				4
1					.				
6									
3	28	8 Iunij	5	26	3	d	18 A	19 A	3
6	Maij				Dec.				5
1									
7									
3	13	24 Maij	6	28	2	c	7 A	11 A	4
6	Maij				Dec.				2
1									
8									
3	2	13 Iunij	7	25	1	b	27 M	3 A	1

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff.
6 1 9	Iunij				Dec.				4
3 6 2 0	24 Maij	4 Iunij	8	26	29 Nou .	A g	15 A	22 A	4 2
3 6 2 1	13 Iunij	24 Iunij	9	23	28 Nou .	f	4 A	7 A	7
3 6 2 2	29 Maij	9 Iunij	1 0	25	27 Nou .	e	24 M	30 M	1 4
3 6 2 3	21 Maij	1 Iunij	1 1	27	3 Dec.	d	12 A	19 A	4 2
3 6 2 4	9 Iunij	20 Iunij	1 2	24	1 Dec.	c b	1 A	3 A	7
3 6 2 5	25 Maij	5 Iunij	1 3	26	30 Nou .	A	21 M	26 M	1 4
3 6 2 6	17 Maij	28 Maij	1 4	27	29 Nou .	g	9 A	15 A	4 2
3 6	6 Iunij	17 Iunij	1 5	24	28 Nou	f	29 M	31 M	7

A . D . 2 7	Pent ecost	Corpus Christi	I n d . Sund. aft. Pent.	1st Adv . Dom. lett.	Luna 14	Easter	D i ff.	
3 6 2 8	28 Maij	8 Iunij	1 26	3 Dec.	e d	17 A	19 A	3 5
3 6 2 9	13 Maij	24 Maij	2 28	2 Dec.	c	5 A	11 A	4 2
3 6 3 0	2 Iunij	13 Iunij	3 25	1 Dec.	b	25 M	27 M	7
3 6 3 1	18 Maij	29 Maij	4 27	30 Nou .	A	13 A	16 A	4 2
3 6 3 2	6 Iunij	17 Iunij	5 24	28 Nou .	g f	2 A	7 A	1 4
3 6 3 3	29 Maij	9 Iunij	6 25	27 Nou .	e	22 M	23 M	7
3 6 3 4	21 Maij	1 Iunij	7 27	3 Dec.	d	10 A	12 A	3 5
3 6 3	3 Iunij	14 Iunij	8 25	2 Dec.	c	30 M	4 A	1 4

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff.
5									
3 6 3 6	25 Maij	5 Iunij	9	26	30 Nou .	b A	18 A	23 M [recte: 23 A]	4 2
3 6 3 7	17 Maij	28 Maij	1 0	27	29 Nou .	g	7 A	8 A	3 5
3 6 3 8	6 Iunij	17 Iunij	1 1	24	28 Nou .	f	27 M	31 M	7
3 6 3 9	22 Maij	2 Iunij	1 2	26	27 Nou .	e	15 A	20 A	4 2
3 6 4 0	10 Iunij	21 Iunij	1 3	24	2 Dec.	d c	4 A	11 A	1 4
3 6 4 1	2 Iunij	13 Iunij	1 4	25	1 Dec.	b	24 M	27 M	7
3 6 4 2	18 Maij	29 Maij	1 5	27	30 Nou .	A	2 A [recte: 12 A]	16 A	4 2
3 6 4 3	7 Iunij	18 Iunij	1	24	29 Nou .	g	1 A	8 A	1 4

A . D . .	Pent ecost	Corpus Christi	I n d . .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff.
3 6 4 4	29 Maij	9 Iunij	2	25	27 Nou .	f e	21 M	23 M	7
3 6 4 5	14 Maij	25 Maij	3	28	3 Dec.	d	9 A	12 A	4 2
3 6 4 6	3 Iunij	14 Iunij	4	25	2 Dec.	c	29 M	4 A	1 4
3 6 4 7	26 Maij	6 Iunij	5	26	1 Dec.	b	17 A	24 A	4 2
3 6 4 8	10 Maij	21 Maij	6	28	29 Nou .	A g	5 A	8 A	4 2
3 6 4 9	30 Maij	10 Iunij	7	25	28 Nou .	f	25 M	31 M	1 4
3 6 5 0	22 Maij	2 Iunij	8	26	27 Nou .	e	13 A	20 A	4 2
3 6 5 1	11 Iunij	22 Iunij	9	24	3 Dec.	d	2 A	5 A	7
3	26	6 Iunij	1	26	1	c b	22 M	27 M	1

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff.
6 5 2	Maij		0		Dec.				4
3 6 5 3	18 Maij	29 Maij	1 1	27	30 Nou .	A	10 A	16 A	4 2
3 6 5 4	7 Iunij	18 Iunij	1 2	24	29 Nou .	g	30 M	1 A	7
3 6 5 5	23 Maij	3 Iunij	1 3	26	28 Nou .	f	18 A	21 A	4 2
3 6 5 6	14 Maij	25 Maij	1 4	28	3 Dec.	e d	7 A	12 A	4 2
3 6 5 7	3 Iunij	14 Iunij	1 5	25	2 Dec.	c	27 M	28 M	7
3 6 5 8	26 Maij	6 Iunij	1	26	1 Dec.	b	15 A	17 A	3 5
3 6 5 9	8 Iunij	19 Iunij	2	24	30 Nou .	A	4 A	9 A	1 4
3 6	30 Maij	10 Iunij	3	25	28 Nou	g f	24 M	31 M	1 4

A . D . 6 0	Pent ecost	Corpus Christi	I n d . Sund. Pent.	aft.	1st Adv . .	Dom. lett.	Luna 14	Easter	D i ff.
3 6 6 1	22 Maij	2 Iunij	4	26	27 Nou .	e	12 A	13 A	3 5
3 6 6 2	11 Iunij	22 Iunij	5	24	3 Dec.	d	1 A	5 A	7
3 6 6 3	27 Maij	7 Iunij	6	26	2 Dec.	c	21 M	28 M	1 4
3 6 6 4	18 Maij	29 Maij	7	27	30 Nou .	b A	9 A	16 A	4 2
3 6 6 5	7 Iunij	18 Iunij	8	24	29 Nou .	g	29 M	1 A	7
3 6 6 6	23 Maij	3 Iunij	9	26	28 Nou .	f	17 A	21 A	4 2
3 6 6 7	15 Maij	26 Maij	1 0	27	27 Nou .	e	5 A	6 A	3 5
3 6 6	3 Iunij	14 Iunij	1 1	25	2 Dec.	d c	25 M	28 M	7

A			I		1st				D
.	Pent	Corpus	n	Sund. aft.	Adv	Dom.			i
.	ecost	Christi	d	Pent.	.	lett.	Luna 14	Easter	ff.
8									
3	19	30 Maij	1	27	1	b	13 A	17 A	4
6	Maij		2		Dec.				2
6									
9									
3	8	19 Iunij	1	24	30	A	2 A	9 A	1
6	Iunij		3		Nou				4
7					.				
0									
3	31	11 Iunij	1	25	29	g	22 M	25 M	7
6	Maij		4		Nou				
7					.				
1									

Folio 454 — new calendar (*Calendarium Gregorianum*), A.D. 3672–3727

Running head: CALEND. GREG. — TABVLA FESTORVM [MOBILIVM TEMPORA]RVM.

Columns: A.D. | Golden Number (*Aur. Num.*) | Epact (*Epactæ*) | Dominical letter(s), Greg. | *Plenilunium medium* (day · hour, month) | Luna 14, Greg. | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter (*Pascha Calend. noui*) | Ascension (*Ascensio Domini*)

A	G									
.	.									
D	N	Ep	Dom.		Lun	Septuag	Ash	Eas	Ascen	
.	.	act	lett.	Plenilunium (D·H)	a 14	esima	Wed.	ter	sion	
3	6	xvi	c b	26 · 15 M	26	24 Ian.	10	27	5 Maij	
6		ii			M		Febr.	M		
7										
2										
3	7	xxi	A	14 · 12 A	14 A	12 Febr.	1	16	25	
6		x					Mart	A	Maii	

A	G									
.	.									
D	N	Ep	Dom.		Lun	Septuag	Ash	Eas	Ascen	
.	.	act	lett.	Plenilunium (D·H)	a 14	esima	Wed.	ter	sion	
7							.			
3										
3	8	x	g	3 · 21 A	3 A	4 Febr.	21	8 A	17	
6							Febr.		Maij	
7										
4										
3	9	xxi	f	24 · 6 M	23	20 Febr.	6	24	2 Maij	
6					M		Feb.	M		
7										
5										
3	1	ii	e d	11 · 3 A	11 A	9 Febr.	26	12	21	
6	0						Febr.	A	Maij	
7										
6										
3	1	xiii	c	31 · 12 M	31	31 Ian.	17	4 A	13	
6	1				M		Febr.		Maij	
7										
7										
3	1	xxi	b	19 · 10 A	18 A	20 Febr.	9	24	2	
6	2	iii					Mart	M	Iunij	
7							.			
8										
3	1	v	A	8 · 19 A	8 A	5 Febr.	22	9 A	18	
6	3						Febr.		Maij	
7										
9										
3	1	xvi	g f	28 · 3 M	28	28 Ian.	14	31	9 Maij	
6	4				M		Febr.	M		
8										
0										
3	1	xx	e	16 · 1 A	16 A	16 Febr.	5	20	29	
6	5	vii					Mart	A	Maij	
8							.			

A . D .	G . N .	Ep act	Dom. lett.	Plenilunium (D·H)	Lun a 14	Septuag esima	Ash Wed.	Eas ter	Ascen sion
1									
3 6 8 2	1 6	viii	d	5 · 10 A	5 A	8 Febr.	25 Febr.	12 A	21 Maij
3 6 8 3	1 7	xix	c	25 · 19 M	25 M	24 Ian.	10 Febr.	28 M	6 Maij
3 6 8 4	1 8	*	b A	12 · 16 A	13 A	13 Febr.	1 Mart .	16 A	25 Maij
3 6 8 5	1 9	xi	g	2 · 1 A	2 A	4 Febr.	21 Febr.	8 A	17 Maij
3 6 8 6	1	xxi ii	f	22 · 10 M	21 M	20 Ian.	6 Febr.	24 M	2 Maij
3 6 8 7	2	iiii	e	10 · 7 A	9 A	10 Febr.	27 Febr.	13 A	22 Maij
3 6 8 8	3	xv	d c	29 · 16 M	29 M	1 Febr.	18 Febr.	4 A	13 Maij
3 6 8 9	4	xx vi	b	17 · 14 A	17 A	20 Febr.	9 Mar.	24 A	2 Iunij

A	G									
.	.									
D	N	Ep	Dom.		Lun	Septuag	Ash	Eas	Ascen	
.	.	act	lett.	Plenilunium (D·H)	a 14	esima	Wed.	ter	sion	
3	5	vii	A	6 · 22 A	6 A	5 Febr.	22	9 A	18	
6							Febr.		Maij	
9										
0										
3	6	xvi	g	27 · 7 A [recte: 27 · 7	26	28 Ian.	14	1 A	10	
6		ii		M]	M		Febr.		Maij	
9										
1										
3	7	xxi	f e	14 · 5 A	14 A	17 Febr.	5	20	29	
6		x					Mart	A	Maij	
9							.			
2										
3	8	x	d	3 · 14 A	3 A	1 Febr.	18	5 A	14	
6							Febr.		Maij	
9										
3										
3	9	xxi	c	23 · 22 M	23	24 Ian.	10	28	6 Maij	
6					M		Febr.	M		
9										
4										
3	1	ii	b	11 · 20 A	11 A	13 Febr.	2	17	26	
6	0						Mart	A	Maij	
9							.			
5										
3	1	xiii	A g	31 · 5 M	31	29 Ian.	15	1 A	10	
6	1				M		Febr.		Maij	
9										
6										
3	1	xxi	f	19 · 2 A	18 A	17 Febr.	6	21	30	
6	2	ij					Mart	A	Maij	
9							.			
7										
3	1	v	e	8 · 11 A	8 A	9 Febr.	26	13	22	

A	G									
.	.									
D	N	Ep	Dom.		Lun	Septuag	Ash	Eas	Ascen	
.	.	act	lett.	Plenilunium (D·H)	a 14	esima	Wed.	ter	sion	
6	3						Febr.	A	Maij	
9										
8										
3	1	xvi	d	28 · 20 M	28	25 Ian.	11	29	7 Maij	
6	4				M		Febr.	M		
9										
9										
3	1	xx	c	17 · 17 A	17 A	14 Febr.	3	18	27	
7	5	vi					Mart	A	Maij	
0							.			
0										
3	1	vii	b	6 · 2 A	6 A	6 Febr.	23	10	19	
7	6						Febr.	A	Maij	
0										
1										
3	1	xvi	A	26 · 11 M	26	29 Ian.	15	2 A	11	
7	7	ii			M		Febr.		Maij	
0										
2										
3	1	xxi	g	14 · 9 A	14 A	11 Febr.	28	15	24	
7	8	x					Febr.	A	Maij	
0										
3										
3	1	x	f e	2 · 17 A	3 A	3 Febr.	20	6 A	15	
7	9						Febr.		Maij	
0										
4										
3	1	xxi	d	23 · 2 M	22	25 Ian.	11	29	7 Maij	
7		i			M		Febr.	M		
0										
5										
3	2	iii	c	11 · 0 A	10 A	7 Febr.	24	11	20	
7							Febr.	A	Maij	

A . D .	G . N .	Ep act	Dom. lett.	Plenilunium (D·H)	Lun a 14	Septuag esima	Ash Wed.	Eas ter	Ascen sion
06									
3707	3	xiii i	b	31 · 9 M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
3708	4	xxv	A g	18 · 6 A	18 A	19 Febr.	7 Mart .	22 A	31 Maij
3709	5	vi	f	7 · 15 A	7 A	10 Febr.	27 Febr.	14 A	23 Maij
3710	6	xvi i	e	28 · 0 M	27 M	26 Ian.	12 Febr.	30 M	8 Maij
3711	7	xxviii	d	15 · 21 A	15 A	15 Febr.	4 Mart .	19 A	28 Maij
3712	8	ix	c b	4 · 6 A	4 A	7 Febr.	24 Febr.	10 A	19 Maij
3713	9	xx	A	24 · 15 M	24 M	22 Ian.	8 Febr.	26 M	4 Maij
3714	10	i	g	12 · 12 A	12 A	11 Febr.	28 Febr.	15 A	24 Maij

A	G									
.	.									
D	N	Ep	Dom.		Lun	Septuag	Ash	Eas	Ascen	
.	.	act	lett.	Plenilunium (D·H)	a 14	esima	Wed.	ter	sion	
3	1	x	c	3 · 10 A	3 A	31 Ian.	17	4 A	13	
7	9						Febr.		Maij	
2										
3										
3	1	xxi	b A	22 · 19 M	22	23 Ian.	9	26	4 Maij	
7		i			M		Febr.	M		
2										
4										
3	2	iii	g	10 · 16 A	10 A	11 Febr.	28	15	24	
7							Febr.	A	Maij	
2										
5										
3	3	xiii	f	31 · 1 M	30	27 Ian.	13	31	9 Maij	
7		i			M		Febr.	M		
2										
6										
3	4	xx	e	18 · 23 A	18 A	16 Febr.	5	20	29	
7		v					Mar.	A	Maij	
2										
7										

Folio 455 — old calendar (*Calendarium vetus*), A.D. 3672–3727

Running head: CAPVT XXII. — MOBILIVM TEMPORARIA.

Columns as for folio 453. (This old-calendar leaf faces the new-calendar leaf of folio 454, covering the same span of years.)

A			I						D
.			n		1st				i
D	Pent	Corpus	d	Sund. aft.	Adv	Dom.			ff
.	ecost	Christi	.	Pent.	.	lett.	Luna 14	Easter	.
3	15	26 Maij	1	27	27	f e	10 A	13 A	4
6	Maij		5		Nou				2
7					.				

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff .
2									
3 6 7 3	4 Iunij	15 Iunij	1	25	3 Dec.	d	30 M	5 A	1 4
3 6 7 4	27 Maij	7 Iunij	2	26	2 Dec.	c	18 A	25 A	4 2
3 6 7 5	12 Maij	23 Maij	3	28	1 Dec.	b	7 A	10 A	4 2
3 6 7 6	31 Maij	11 Iunij	4	25	29 Nou .	A g	27 M	1 A	1 4
3 6 7 7	23 Maij	3 Iunij	5	26	28 Nou .	f	15 A	21 A	4 2
3 6 7 8	12 Iunij	23 Iunij	6	23	27 Nou .	e	4 A	6 A	7
3 6 7 9	28 Maij	8 Iunij	7	26	3 Dec.	d	24 M	29 M	1 4
3 6 8 0	19 Maij	30 Maij	8	27	1 Dec.	ç b	12 A	17 A	4 2

A . D . .	Pent ecost	Corpus Christi	I n d . .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff .
3 6 8 1	8 Iunij	19 Iunij	9	24	30 Nou .	A	1 A	2 A	7
3 6 8 2	31 Maij	11 Iunij	1 0	25	29 Nou .	g	21 M	25 M	7
3 6 8 3	16 Maij	27 Maij	1 1	27	28 Nou .	f	9 A	14 A	4 2
3 6 8 4	4 Iunij	15 Iunij	1 2	25	3 Dec.	e d	29 M	5 A	1 4
3 6 8 5	27 Maij	7 Iunij	1 3	26	2 Dec.	c	17 A	18 A	3 5
3 6 8 6	12 Maij	23 Maij	1 4	28	1 Dec.	b	5 A	10 A	4 2
3 6 8 7	1 Iunij	12 Iunij	1 5	25	30 Nou .	A	25 M	26 M	7
3 6 8 8	23 Maij	3 Iunij	1	26	28 Nou .	g f	13 A	14 A	3 5
3	12	23 Iunij	2	23	27	e	2 A	6 A	7

A . D . .	Pent ecost	Corpus Christi	I n d . .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff .
6 8 9	Iunij				Nou .				
3 6 9 0	28 Maij	8 Iunij	3	26	3 Dec.	d	22 A [recte: 22 M]	29 M	1 4
3 6 9 1	20 Maij	31 Maij	4	27	2 Dec.	c	10 A	11 A	3 5
3 6 9 2	8 Iunij	19 Iunij	5	24	30 Nou .	b A	30 M	2 A	7
3 6 9 3	24 Maij	4 Iunij	6	26	29 Nou .	g	18 A	22 M [recte: 22 A]	4 2
3 6 9 4	16 Maij	27 Maij	7	27	28 Nou .	f	7 A	14 A	4 2
3 6 9 5	5 Iunij	16 Iunij	8	24	27 Nou .	e	27 M	30 M	7
3 6 9 6	20 Maij	31 Maij	9	27	2 Dec.	d c	15 A	18 A	4 2
3 6	9 Iunij	20 Iunij	1 0	24	1 Dec.	b	4 A	10 A	1 4

A . D . .	Pent ecost	Corpus Christi	I n d . .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff .
9 7 3 6 9 8 3 6 7 0 0 3 7 0 1 3 7 0 2 3 7 0 3 3 7 0 3 7 0 4 3 7 0	1 Iunij 17 Maij 6 Iunij 29 Maij 21 Maij 3 Iunij 25 Maij 17 Maij	12 Iunij 28 Maij 17 Iunij 9 Iunij 1 Iunij 14 Iunij 5 Iunij 28 Maij	1 1 1 2 1 3 1 4 1 5 1 2 3	25 27 24 25 27 25 26 27	30 Nou . 29 Nou . 28 Nou . 27 Nou . 3 Dec. 2 Dec. 30 Nou . 29 Nou .	A g f e d c b A g f	24 M 12 A 1 A 21 M 9 A 29 M 17 A 5 A	26 M 15 A 6 A 22 M 11 A 3 A 22 A 7 A	7 4 2 1 4 7 3 5 1 4 4 2 3 5

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff .
5									
3 7 0 6	30 Maij	10 Iunij	4	25	28 Nou .	e	25 M	30 M	1 4
3 7 0 7	22 Maij	2 Iunij	5	26	27 Nou .	d	13 A	19 A	4 2
3 7 0 8	10 Iunij	21 Iunij	6	24	2 Dec.	c b	2 A	3 A	7
3 7 0 9	2 Iunij	13 Iunij	7	25	1 Dec.	A	22 M	26 M	7
3 7 1 0	18 Maij	29 Maij	8	27	30 Nou .	g	10 A	15 A	4 2
3 7 1 1	7 Iunij	18 Iunij	9	24	29 Nou .	f	30 M	31 M	7
3 7 1 2	29 Maij	9 Iunij	1 0	25	27 Nou .	e d	18 A	19 A	3 5
3 7 1 3	14 Maij	25 Maij	1 1	28	3 Dec.	c	7 A	11 A	4 2

A . D . .	Pent ecost	Corpus Christi	I n d . .	Sund. aft. Pent.	1st Adv .	Dom. lett.	Luna 14	Easter	D i ff .
3 7 1 4	3 Iunij	14 Iunij	1 2	25	2 Dec.	b	27 M	3 A	1 4
3 7 1 5	26 Maij	6 Iunij	1 3	26	1 Dec.	A	15 A	16 A	3 5
3 7 1 6	10 Maij	21 Maij	1 4	28	29 Nou .	g f	4 A	7 A	4 2
3 7 1 7	30 Maij	10 Iunij	1 5	25	28 Nou .	e	24 M	30 A [recte: 30 M]	1 4
3 7 1 8	22 Maij	2 Iunij	1	26	27 Nou .	d	12 A	19 A	4 2
3 7 1 9	11 Iunij	22 Iunij	2	24	3 Dec.	c	1 A	4 A	7
3 7 2 0	26 Maij	6 Iunij	3	26	1 Dec.	b A	21 M	26 M	1 4
3 7 2 1	18 Maij	29 Maij	4	27	30 Nou .	g	9 A	15 A	4 2
3	7	18 Iunij	5	24	29	f	29 M	31 M	7

A			I		1st				D
.	Pent	Corpus	n	Sund. aft.	Adv	Dom.			i
.	ecost	Christi	.	Pent.	.	lett.	Luna 14	Easter	ff
7	Iunij				Nou				
2					.				
2									
3	23	3 Iunij	6	26	28	e	17 A	20 A	4
7	Maij				Nou				2
2					.				
3									
3	14	25 Maij	7	28	3	d c	5 A	11 A	4
7	Maij				Dec.				2
2									
4									
3	3	14 Iunij	8	25	2	b	25 M	27 M	7
7	Iunij				Dec.				
2									
5									
3	19	30 Maij	9	27	1	A	13 A	16 A	4
7	Maij				Dec.				2
2									
6									
3	8	19 Iunij	1	24	30	g	2 A	8 A	1
7	Iunij		0		Nou				4
2					.				
7									

Caput XXII — Table of the Moveable Feasts for the Times (*Tabula Festorum Mobilium Temporaria*), 1600–5000 (continued)

This opening continues the great year-by-year table of the moveable feasts. Each range of years is set across a facing pair of leaves: a **new-calendar (Gregorian)** leaf carrying the early-year columns (golden number, epact, Dominical letter, mean full moon, Luna 14, Septuagesima, Ash Wednesday, Easter, Ascension), and

an **old-calendar (*veteris*)** leaf carrying the later columns (Pentecost, Corpus Christi, Indiction, Sundays after Pentecost, First Sunday of Advent) together with the old-calendar Dominical letter, Luna 14, and Easter, and the difference in days between the new and old Easter. The first two pages below (printed pp. 456–457) form one such facing pair, covering **A.D. 3728–3783**; the third (printed p. 458) begins the next new-calendar leaf, **A.D. 3784–3839**.

Column conventions (as printed, not normalized): In the mean-full-moon, Luna 14, and Easter columns, the trailing letter **A** = *Aprilis* (April) and **M** = *Martius* (March). The mean full moon is given as **day · hour · month-letter**. In the feast columns the months appear as printed: **Ian.** = January, **Feb.** = February, **Mar.** = March, **Maij** = May, **Iunij** = June, **Nou.** = November, **Dec.** = December. Roman/Arabic numeral forms and i-/j-terminal sorts in the epact column are preserved verbatim; the epact value 30 is set with an asterisk, given here as *.

New-Calendar Leaf (printed p. 456) — A.D. 3728–3783

Columns: **A.D.** | **Golden No.** [*Aur. Num.*] | **Epact** [*Epactæ*] | **Dominical Letter(s)** [*Lit. Dnicales Calend. Greg.*; two letters in leap years] | **Mean Full Moon, Greg.** (day · hour · month) [*Plenilunia media Cal. Gregor.*] | **Luna 14, Greg.** [*Lunæ xiiij. Cal. Gregoriani*] | **Septuagesima** | **Ash Wednesday** [*Dies Cinerum*] | **Easter, new cal.** [*Pascha Calend. noui*] | **Ascension** [*Ascensio Domini*]

A. D.	G N	Do Epact	m. Full Moon	Luna 14	Septuag .	Ash Wed.	Easte r	Ascensio n
37 28	5	vj	d c 7 · 7 A	7 A	8 Feb.	25 Feb.	11 A	20 Maij
37 29	6	xvij	b 27 · 16 M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
37 30	7	xxviiij	A 15 · 14 A	15 A	12 Feb.	1 Mar.	16 A	25 Maij
37 31	8	ix	g 4 · 23 A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
37 32	9	xx	f e 24 · 7 M	24 M	27 Ian.	13 Feb.	30 M	8 Maij
37 33	1	j	d 12 · 5 A	12 A	15 Feb.	4 Mar.	19 A	28 Maij
37 34	1	xij	c 1 · 14 A	1 A	31 Ian.	17 Feb.	4 A	13 Maij
	1							

A. D.	G N	Epact	Do m.	Full Moon	Luna 14	Septuag .	Ash Wed.	Easte r	Ascensio n
37 35	1 2	xxiiij	b	21 · 23 M	21 M	23 Ian.	9 Feb.	27 M	5 Maij
37 36	1 3	iiii	A g	8 · 20 A	8 A	12 Feb.	29 Feb.	15 A	24 Maij
37 37	1 4	xv	f	29 · 5 M	29 M	27 Ian.	13 Feb.	31 M	9 Maij
37 38	1 5	xxvj	e	17 · 3 A	17 A	16 Feb.	5 Mar.	20 A	29 Maij
37 39	1 6	vij	d	6 · 11 A	6 A	8 Feb.	25 Feb.	12 A	21 Maij
37 40	1 7	xviiij	c b	25 · 20 M	26 M	24 Ian.	10 Feb.	27 M	5 Maij
37 41	1 8	xxix	A	13 · 18 A	14 A	12 Feb.	1 Mar.	16 A	25 Maij
37 42	1 9	x	g	3 · 3 A	3 A	4 Feb.	21 Feb.	8 A	17 Maij
37 43	1	xxij	f	23 · 11 M	22 M	20 Ian.	6 Feb.	24 M	2 Maij
37 44	2	iiij	e d	10 · 9 A	10 A	9 Feb.	26 Feb.	12 A	21 Maij
37 45	3	xiiiij	c	30 · 18 M	30 M	31 Ian.	17 Feb.	4 A	13 Maij
37 46	4	xxv	b	18 · 15 A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
37 47	5	vi	A	8 · 0 A	7 A	5 Feb.	22 Feb.	9 A	18 Maij
37 48	6	xvij	g f	27 · 9 M	27 M	28 Ian.	14 Feb.	31 M	9 Maij
37 49	7	xxviiij	e	15 · 6 A	15 A	16 Feb.	5 Mar.	20 A	29 Maij
37 50	8	ix	d	4 · 15 A	4 A	1 Feb.	18 Feb.	5 A	14 Maij
37	9	xx	c	25 · 0 M	24 M	24 Ian.	10 Feb.	28 M	6 Maij

A. D.	G N Epact	Do m.	Full Moon	Luna 14	Septuag .	Ash Wed.	Easte r	Ascensio n
51								
37 52	1 j 0	b A	11 · 22 A	12 A	13 Feb.	1 Mar.	16 A	25 Maij
37 53	1 xij 1	g	1 · 6 A	1 A	4 Feb.	21 Feb.	8 A	17 Maij
37 54	1 xxiiij 2	f	21 · 15 M	21 M	20 Ian.	6 Feb.	24 M	2 Maij
37 55	1 iiij 3	e	9 · 13 A	9 A	9 Feb.	26 Feb.	13 A	22 Maij
37 56	1 xv 4	d c	28 · 22 M	29 M	1 Feb.	18 Feb.	4 A	13 Maij
37 57	1 xxvj 5	b	16 · 19 A	17 A	20 Feb.	9 Mar.	24 A	2 Iunij
37 58	1 vij 6	A	6 · 4 A	6 A	5 Feb.	22 Feb.	9 A	18 Maij
37 59	1 xviiij 7	g	26 · 13 M	26 M	28 Ian.	14 Feb.	1 A	10 Maij
37 60	1 xxix 8	f e	13 · 10 A	14 A	17 Feb.	5 Mar.	20 A	29 Maij
37 61	1 x 9	d	2 · 19 A	3 A	1 Feb.	18 Feb.	5 A	14 Maij
37 62	1 xxij	c	23 · 4 M	22 M	24 Ian.	10 Feb.	28 M	6 Maij
37 63	2 iij	b	11 · 1 A	10 A	13 Feb.	2 Mar.	17 A	26 Maij
37 64	3 xiiij	A g	30 · 10 M	30 M	29 Ian.	15 Feb.	1 A	10 Maij
37 65	4 xxv	f	18 · 8 A	18 A	17 Feb.	6 Mar.	21 A	30 Maij
37 66	5 vi	e	7 · 17 A	7 A	9 Feb.	26 Feb.	13 A	22 Maij
37 67	6 xvij	d	28 · 1 M	27 M	25 Ian.	11 Feb.	29 M	7 Maij

A. D.	G N	Epact	Do m.	Full Moon	Luna 14	Septuag .	Ash Wed.	Easte r	Ascensio n
37 68	7	xxviiij	c b	14 · 23 A	15 A	14 Feb.	2 Mar.	17 A	26 Maij
37 69	8	ix	A	4 · 8 A	4 A	5 Feb.	22 Feb.	9 A	18 Maij
37 70	9	xx	g	24 · 17 M	24 M	21 Ian.	7 Feb.	25 M	3 Maij
37 71	1 0	j	f	12 · 14 A	12 A	10 Feb.	27 Feb.	14 A	23 Maij
37 72	1 1	xij	e d	31 · 23 M	1 A	2 Feb.	19 Feb.	5 A	14 Maij
37 73	1 2	xxiiij	c	21 · 8 M	21 M	24 Ian.	10 Feb.	28 M	6 Maij
37 74	1 3	iiiij	b	9 · 5 A	9 A	6 Feb.	23 Feb.	10 A	19 Maij
37 75	1 4	xv	A	29 · 14 M	29 M	29 Ian.	15 Feb.	2 A	11 Maij
37 76	1 5	xxvj	g f	16 · 12 A	17 A	18 Feb.	6 Mar.	21 A	30 Maij
37 77	1 6	vij	e	5 · 20 A	6 A	9 Feb.	26 Feb.	13 A	22 Maij
37 78	1 7	xviiij	d	26 · 15 M	26 M	25 Ian.	11 Feb.	29 M	7 Maij
37 79	1 8	xxix	c	14 · 3 A	14 A	14 Feb.	3 Mar.	18 A	27 Maij
37 80	1 9	x	b A	2 · 12 A	3 A	6 Feb.	23 Feb.	9 A	18 Maij
37 81	1	xxij	g	22 · 20 M	22 M	21 Ian.	7 Feb.	25 M	3 Maij
37 82	2	iiij	f	10 · 18 A	10 A	10 Feb.	27 Feb.	14 A	23 Maij
37 83	3	xiiii	e	31 · 3 M	30 M	2 Feb.	19 Feb.	6 A	15 Maij

Header: **CAPUT XXII — MOBILIVM TEMPORARIA.**

A . D .	Pente cost	Corpus Chr.	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
3 7 2 8	30 Maij	10 Iunij	1 1	25	28 Nou.	f e	22 M	23 M	7
3 7 2 9	22 Maij	2 Iunij	1 2	26	27 Nou.	d	10 A	12 A	3 5
3 7 3 0	4 Iunij	15 Iunij	1 3	25	3 Dec.	c	30 M	4 A	1 4
3 7 3 1	27 Maij	7 Iunij	1 4	26	2 Dec.	b	18 A	24 A	4 2
3 7 3 2	18 Maij	29 Maij	1 5	27	30 Nou.	A g	7 A	8 A	3 5
3 7 3	7 Iunij	18 Iunij	1	24	29 Nou.	f	27 M	31 M	7

A . D .	Pente cost	Corpus Chr.	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
3									
3 7 3 4	23 Maij	3 Iunij	2	26	28 Nou.	e	15 A	20 A	4 2
3 7 3 5	15 Maij	26 Maij	3	27	27 Nou.	d	4 A	5 A	3 5
3 7 3 6	3 Iunij	14 Iunij	4	25	2 Dec.	c b	24 M	27 M	7
3 7 3 7	19 Maij	30 Maij	5	27	1 Dec.	A	12 A	16 A	4 2
3 7 3 8	8 Iunij	19 Iunij	6	24	30 Nou.	g	1 A	8 A	1 4
3 7 3 9	31 Maij	11 Iunij	7	25	29 Nou.	f	21 M	24 M	7
3 7 4 0	15 Maij	26 Maij	8	27	27 Nou.	e d	9 A	12 A	4 2
3 7 4 1	4 Iunij	15 Iunij	9	25	3 Dec.	c	29 M	4 A	1 4

A . D .	Pente cost	Corpus Chr.	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
3 7 4 2	27 Maij	7 Iunij	1 0	26	2 Dec.	b	17 A	24 A	4 2
3 7 4 3	12 Maij	23 Maij	1 1	28	1 Dec.	A	5 A	9 A	4 2
3 7 4 4	31 Maij	11 Iunij	1 2	25	29 Nou.	g f	25 M	31 M	1 4
3 7 4 5	23 Maij	3 Iunij	1 3	26	28 Nou.	e	13 A	20 A	4 2
3 7 4 6	12 Iunij	23 Iunij	1 4	23	27 Nou.	d	2 A	5 A	7
3 7 4 7	28 Maii	8 Iunij	1 5	26	3 Dec.	c	22 M	28 M	1 4
3 7 4 8	19 Maij	30 Maij	1	27	1 Dec.	b A	10 A	16 A	4 2
3 7 4 9	8 Iunij	19 Iunij	2	24	30 Nou.	g	30 M	1 A	7
3	24	4 Iunij	3	26	29 Nou.	f	18 A	21 A	4

A . D .	Pente cost	Corpus Chr.	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
7 5 0	Maij								2
3 7 5 1	16 Maij	27 Maij	4	27	28 Nou.	e	7 A	13 A	4 2
3 7 5 2	4 Iunij	15 Iunij	5	25	3 Dec.	d c	27 M	28 M	7
3 7 5 3	27 Maij	7 Iunij	6	26	2 Dec.	b	15 A	17 A	3 5
3 7 5 4	12 Maij	23 Maij	7	28	1 Dec.	A	4 A	9 A	4 2
3 7 5 5	1 Iunij	12 Iunij	8	25	30 Nou.	g	24 M	25 M	7
3 7 5 6	23 Maij	3 Iunij	9	26	28 Nou.	f e	12 A	13 A	3 5
3 7 5 7	12 Iunij	23 Iunij	1 0	23	27 Nou.	d	1 A	5 A	7
3 7	28 Maij	8 Iunij	1 1	26	3 Dec.	c	21 M	28 M	1 4

A . D .	Pente cost	Corpus Chr.	In d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Diff.
58									
3759	20 Maij	31 Maij	12	27	2 Dec.	b	9 A	10 A	35
3760	8 Iunij	19 Iunij	13	24	30 Nou.	A g	29 M	1 A	7
3761	24 Maij	4 Iunij	14	26	29 Nou.	f	17 A	21 A	42
3762	16 Maij	27 Maij	15	27	28 Nou.	e	5 A	6 A	35
3763	5 Iunij	16 Iunij	1	24	27 Nou.	d	25 M	29 M	7
3764	20 Maij	31 Maij	2	27	2 Dec.	c b	13 A	17 A	42
3765	9 Iunij	20 Iunij	3	24	1 Dec.	A	2 A	9 A	14
3766	1 Iunij	12 Iunij	4	25	30 Nou.	g	22 M	25 M	7

A . D .	Pente cost	Corpus Chr.	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
6									
3 7 6 7	17 Maij	28 Maij	5	27	29 Nou.	f	10 A	14 A	4 2
3 7 6 8	5 Iunij	16 Iunij	6	24	27 Nou.	e d	30 M	5 A	1 4
3 7 6 9	28 Maij	8 Iunij	7	26	3 Dec.	c	18 A	25 A	4 2
3 7 7 0	13 Maij	24 Maij	8	28	2 Dec.	b	7 A	10 A	4 2
3 7 7 1	2 Iunij	13 Iunij	9	25	1 Dec.	A	27 M	2 A	1 4
3 7 7 2	24 Maij	4 Iunij	1 0	26	29 Nou.	g f	15 A	21 A	4 2
3 7 7 3	16 Maij	27 Maij	1 1	27	28 Nou.	e	4 A	6 A	3 5
3 7 7 4	29 Maij	9 Iunij	1 2	25	27 Nou.	d	24 M	29 M	1 4

A . D .	Pente cost	Corpus Chr.	I n d .	Sun. aft. Pent.	1st Sun. Advent	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
3 7 7 5	21 Maij	1 Iunij	1 3	27	3 Dec.	c	12 A	18 A	4 2
3 7 7 6	9 Iunij	20 Iunij	1 4	24	1 Dec.	b A	1 A	2 A	7
3 7 7 7	1 Iunij	12 Iunij	1 5	25	30 Nou.	g	21 M	25 M	7
3 7 7 8	17 Maij	28 Maij	1	27	29 Nou.	f	9 A	14 A	4 2
3 7 7 9	6 Iunij	17 Iunij	2	24	28 Nou.	e	29 M	30 M	7
3 7 8 0	28 Maij	8 Iunij	3	26	3 Dec.	d c	17 A	18 A	3 5
3 7 8 1	13 Maij	24 Maij	4	28	2 Dec.	b	5 A	10 A	4 2
3 7 8 2	2 Iunij	13 Iunij	5	25	1 Dec.	A	25 M	26 M	7
3	25	5 Iunij	6	26	30 Nou.	g	13 A	15 A	3

A			I						
.			n						
D	Pente	Corpus	d	Sun. aft.	1st Sun.	Dom.	Luna 14	Easter	Di
.	cost	Chr.	.	Pent.	Advent	(old)	(old)	(old)	ff.
7	Maij								5
8									
3									

New-Calendar Leaf (printed p. 458) — A.D. 3784–3839

Header: **CALEND. GREG. — TABVLA FESTORVM [MOBILIVM].**

Columns as for the first leaf. Note the centurial epact adjustment at A.D. 3800: from 3800 onward every epact drops one place (e.g. golden number 1 now takes epact xxj, not xxij), and golden number 10 takes epact 30, printed with the asterisk *.

A		D						Ea	
.		o						ste	Ascen
D	Ep	m	Full	Lun				r	sion
.	act	.	Moon	a 14	Septuag.		Ash Wed.		
3	xx	d	18 · 0	18	22 Feb.		10 Mar.	25	3
7	v	c	A	A				A	Iunij
8									
4									
3	vj	b	7 · 9 A	7 A	6 Feb.		23 Feb.	10	19
7								A	Maij
8									
5									
3	xvi	A	27 · 18	27	29 Ian.		15 Feb.	2 A	11
7	j		M	M					Maij
8									
6									
3	xx	g	15 · 15	15	18 Feb.		7 Mar.	22	31
7	viiij		A	A				A	Maij
8									
7									
3	ix	f	4 · 0 A	4 A	3 Feb.		20 Feb.	6 A	15
7		e							Maij

A . D .	Ep act	D o m .	Full Moon	Lun a 14	Septuag.	Ash Wed.	Ea ste r	Ascen sion
8								
8								
3 7 8 9	xx	d	24 · 9 M	24 M	25 Ian.	11 Feb.	29 M	7 Maij
3 7 9 0	j	c	12 · 7 A	12 A	14 Feb.	3 Mar.	18 A	27 Maij
3 7 9 1	xij	b	1 · 15 A	1 A	30 Ian.	16 Feb.	3 A	12 Maij
3 7 9 2	xxi ij	A g	21 · 0 M	21 M	22 Ian.	8 Mar. [recte: 8 Feb.]	25 M	3 Maij
3 7 9 3	iiij	f	8 · 22 A	9 A	19 Feb.	27 Feb.	14 A	23 Maij
3 7 9 4	xv	e	29 · 7 M	29 M	26 Ian.	12 Feb.	30 M	8 Maij
3 7 9 5	xx vj	d	17 · 4 A	17 A	15 Feb.	4 Mar.	19 A	28 Maij
3 7 9	vij	c b	5 · 13 A	6 A	7 Feb.	24 Feb.	10 A	19 Maij

A . D .	Ep act	D o m .	Full Moon	Lun a 14	Septuag.	Ash Wed.	Ea ste r	Ascen sion
6								
3 7 9 7	xvi ij	A	25 · 22 M	26 M	29 Ian.	15 Feb.	2 A	11 Maij
3 7 9 8	xxi x	g	13 · 19 A	14 A	11 Feb.	28 Feb.	15 A	24 Maij
3 7 9 9	x	f	3 · 4 A	3 A	3 Feb.	20 Feb.	7 A	16 Maij
3 8 0 0	xxj	e	24 · 13 M	23 M	26 Ian.	12 Feb.	30 M	8 Maij
3 8 0 1	ij	d	11 · 10 A	11 A	8 Feb.	25 Feb.	12 A	21 Maij
3 8 0 2	xiiij	c	31 · 19 M	31 M	31 Ian.	17 Feb.	4 A	13 Maij
3 8 0 3	xxi iiij	b	19 · 17 A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
3 8 0 4	v	A g	8 · 2 A	8 A	12 Feb.	29 Feb.	15 A	24 Maij

A . D .	Ep act	D o m .	Full Moon	Lun a 14	Septuag.	Ash Wed.	Ea ste r	Ascen sion
3 8 0 5	xvj	f	28 · 10 M	28 M	27 Ian.	13 Feb.	31 M	9 Maij
3 8 0 6	xx vij	e	16 · 8 A	16 A	16 Feb.	5 Mar.	20 A	29 Maij
3 8 0 7	viiij	d	5 · 17 A	5 A	8 Feb.	25 Feb.	12 A	21 Maij
3 8 0 8	xix	c b	25 · 2 M	25 M	24 Ian.	10 Feb.	27 M	5 Maij
3 8 0 9	*	A	12 · 23 A	13 A	12 Feb.	1 Mar.	16 A	25 Maij
3 8 1 0	xi	g	2 · 8 A	2 A	4 Feb.	21 Feb.	8 A	17 Maij
3 8 1 1	xxi j	f	22 · 17 M	22 M	20 Feb. [recte: 20 Ian.]	6 Feb.	24 M	2 Maij
3 8 1 2	iiij	e d	9 · 14 A	10 A	9 Feb.	26 Feb.	12 A	21 Maij
3	xiii	c	29 · 23	30	31 Ian.	17 Feb.	4 A	13

A . D .	Ep act	D o m .	Full Moon	Lun a 14	Septuag.	Ash Wed.	Ea ste r	Ascen sion
8 1 3	j		M	M				Maij
3 8 1 4	25	b	17 · 21 A	17 A	20 Feb.	9 Mar.	24 A	2 Iunij
3 8 1 5	vi	A	7 · 6 A	7 A	5 Feb.	22 Feb.	9 A	18 Maij
3 8 1 6	xvi j	g f	26 · 14 M	27 M	28 Ian.	14 Feb.	31 M	9 Maij
3 8 1 7	xx viiij	e	14 · 12 A	15 A	16 Feb.	5 Mar.	20 A	29 Maij
3 8 1 8	ix	d	3 · 21 A	4 A	1 Feb.	18 Feb.	5 A	14 Maij
3 8 1 9	xxj	c	24 · 4 M	23 M	24 Ian.	10 Feb.	28 M	6 Maij
3 8 2 0	ij	b A	11 · 3 A	11 A	13 Feb.	1 Mar.	16 A	25 Maij
3 8	xiiij	g	31 · 12 M	31 M	28 Ian.	14 Feb.	1 A	10 Maij

A . D .	Ep act	D o m .	Full Moon	Lun a 14	Septuag.	Ash Wed.	Ea ste r	Ascen sion
2								
1								
3 8 2 2	xxi iij	f	19 · 9 A	18 A	17 Feb.	6 Mar.	21 A	30 Maij
3 8 2 3	v	e	8 · 18 A	8 A	9 Feb.	26 Feb.	13 A	22 Maij
3 8 2 4	xvi c	d	28 · 3 M	28 M	1 Feb.	18 Feb.	4 A	13 Maij
3 8 2 5	xx vij	b	16 · 1 A	16 A	13 Feb.	2 Mar.	17 A	26 Maij
3 8 2 6	viiij	A	5 · 9 A	5 A	5 Feb.	22 Feb.	9 A	18 Maij
3 8 2 7	xix	g	25 · 18 M	25 M	28 Ian.	14 Feb.	1 A	10 Maij
3 8 2 8	*	f e	12 · 16 A	13 A	17 Feb.	5 Mar.	20 A	29 Maij
3 8 2	xj	d	2 · 1 A	2 A	1 Feb.	18 Feb.	5 A	14 Maij

A . D .	Ep act	D o m .	Full Moon	Lun a 14	Septuag.	Ash Wed.	Ea ste r	Ascen sion
9								
3 8 3 0	xxi j	c	22 · 9 M	22 M	24 Ian.	10 Feb.	28 M	6 Maij
3 8 3 1	iiij	b	10 · 7 A	10 A	12 Feb.	2 Mar.	17 A	26 Maij
3 8 3 2	xiii j	A g	29 · 16 M	30 M	29 Ian.	15 Feb.	1 A	10 Maij
3 8 3 3	25	f	17 · 13 A	17 A	17 Feb.	6 Mar.	21 A	30 Maij
3 8 3 4	vj	e	6 · 22 A	7 A	9 Feb.	26 Feb.	13 A	22 Maij
3 8 3 5	xvi i	d	27 · 7 M	27 M	25 Ian.	11 Feb.	29 M	7 Maij
3 8 3 6	xx viiij	c b	14 · 4 A	15 A	14 Feb.	2 Mar.	17 A	26 Maij
3 8 3 7	ix	A	3 · 13 A	4 A	5 Feb.	22 Feb.	9 A	18 Maij

A		D						
.		o					Ea	
D	Ep	m	Full	Lun			ste	Ascen
.	act	.	Moon	a 14	Septuag.	Ash Wed.	r	sion
3	xxj	g	23 · 22	23	21 Ian.	7 Feb.	25	3
8			M	M			M	Maij
3								
8								
3	ij	f	11 · 20	11	10 Feb.	27 Feb.	14	23
8			A	A			A	Maij
3								
9								

Parsing notes

- **Mean-full-moon hour (H) sub-column.** This is the smallest type on the leaf and is the one column of these *Tabula Festorum* leaves that does not reliably resolve on the scan. Here each H value was read twice, in two overlapping views of the leaf, so that the last hour-digit could be corroborated row by row; the day, Luna 14, and all feast columns are firm, while the H digits are best readings and a handful may carry an error of ± 1 .
- **p. 456, A.D. 3778 mean full moon** — month read as **M** (March): the glyph as it stands in the scan tends toward "A", but the same lunation's Luna 14 (26 M) and the year's Easter (29 M) fix the mean full moon in March. Transcribed 26 · 15 M.
- **p. 458, A.D. 3833 Easter** — the month letter after 21 sits at the A/M ambiguity under foxing; resolved to **A** (April) by the row's Ascension (30 Maij) and Septuagesima (17 Feb.), both of which require Easter = 21 April. Transcribed 21 A.
- Epact i-/j-terminal and Roman/Arabic variants preserved verbatim: e.g. *iiii* (3736) vs *iiij* (3755, 3774); *xiii* (3783) vs *xiiij*; *vi* (3747, 3815) vs *vj* (3834); *xvi* (3824) vs *xvij* (3816); *xvii* (3835) vs *xvij*; and the **Arabic** epact 25 (3814, 3833) beside the Roman *xxv* form used elsewhere. The epact-30 asterisk is rendered * (3809, 3828).
- Dominical-letter pairs in leap years and the full single-letter cycle were verified continuous across all three leaves (new-calendar and old-calendar cycles both). Corpus Christi = Pentecost + 11, Indiction = (year + 3) mod 15, and the Diff column (a multiple of 7, reflecting the Julian↔Gregorian offset

of ~26 days in this era) all check out row by row; these relations were used only to confirm reads, not to supply cell values.

Chapter XXII (continued) — Table of the Movable Feasts through Time

The three leaves here are:

- **Folio 459** — the old-calendar (Julian) leaf for A.D. **3784–3839** (completing the opening whose Gregorian leaf preceded).
- **Folio 460** — the new-calendar (Gregorian) leaf for A.D. **3840–3895**.
- **Folio 461** — the old-calendar (Julian) leaf for A.D. **3840–3895**.

On the old-calendar leaves the Pentecost, Corpus Christi, Indiction, Sundays-after-Pentecost, and First-Sunday-of-Advent columns are reckoned in the **Gregorian** calendar (derived from the new-calendar Easter of the facing leaf); the last four columns — Dominical Letter, Luna 14, Easter, and the Difference — give the **Julian** ("veteris") reckoning and the number of days by which the new Easter differs from the old.

Month forms are transcribed exactly as printed per cell (Iunij / Maij / Maii; Ian. / Feb. / Mar.; Nou. / Dec.). Dominical, Luna-14, and Easter letter-marks (A = April, M = March; index letters A g f e d c b) are given verbatim. Epact 30 is printed as an asterisk *; epact 25 is printed in Arabic figures (25) where the rest are Roman — both retained verbatim.

Folio 459 — Old-Calendar (Julian) Leaf, A.D. 3784–3839

[Running head left: CAPVT XXII. / MOBILIVM TEMPORARIA.; page number 459 top right.]

Columns: **A.D.** [Anni Domini] · **Pentecost** [Pentecoste] · **Corpus Christi** [Corpus Domini] · **Ind.** [Indictio] · **Sun. aft. Pent.** [Dies post Pentecosten] · **1st Sun. Advent** [Dominica prima Adventus] · **Dom. Lett. (Jul.)** [Literæ Dominicales Cal. veteris] · **Luna 14 (Jul.)** [Lunæ xiiij Cal. veteris] · **Easter (Jul.)** [Pascha Cal. veteris] · **Diff.** [days by which the new Easter differs from the old]

A . . . D . . .	Pent ecost	Corpus Christi	I n d .	Sun.aft. Pent.	1st Sun. Advent	Dom. Lett.	Lu na 14	Easter (Jul.)	D i ff.
3 7 8 4	13 Iunij	24 Iunij	7	23	28 Nou.	f e	2 A	6 A	7
3 7 8 5	29 Maij	9 Iunij	8	25	27 Nou.	d	22 M	29 M	1 4
3 7 8 6	21 Maij	1 Iunij	9	27	3 Dec.	c	10 A	11 A	3 5
3 7 8 7	10 Iunij	21 Iunij	1 0	24	2 Dec.	b	30 M	3 A	7
3 7 8 8	25 Maij	5 Iunij	1 1	26	30 Nou.	A g	18 A	22 A	4 2
3 7 8 9	17 Maij	28 Maij	1 2	27	29 Nou.	f	7 A	14 A	4 2
3 7 9 0	6 Iunij	17 Iunij	1 3	24	28 Nou.	e	27 M	30 M	7
3 7 9 1	22 Maij	2 Iunij	1 4	26	27 Nou.	d	15 A	19 A	4 2
3	13	24 Maij	1	28	2 Dec.	c b	4 A	10 A	4

A . D .	Pent ecost	Corpus Christi	I n d .	Sun.aft. Pent.	1st Sun. Advent	Dom. Lett.	Lu na 14	Easter (Jul.)	D i ff.
7 9 2	Maij		5						2
3 7 9 3	2 Iunij	13 Iunij	1	25	1 Dec.	A	24 M	26 M	7
3 7 9 4	18 Maij	29 Maij	2	27	30 Nou.	g	12 A	15 A	4 2
3 7 9 5	7 Iunij	18 Iunij	3	24	29 Nou.	f	1 A	7 A	1 4
3 7 9 6	29 Maij	9 Iunij	4	25	27 Nou.	e d	21 M	22 M	7
3 7 9 7	21 Maij	1 Iunij	5	27	3 Dec.	c	9 A	11 A	3 5
3 7 9 8	3 Iunij	14 Iunij	6	25	2 Dec.	b	29 M	3 A	1 4
3 7 9 9	26 Maij	6 Iunij	7	26	1 Dec.	A	17 A	23 A	4 2
3 8	18 Maij	29 Maij	8	27	30 Nou.	g f	5 A	7 A	3 5

A . D .	Pent ecost	Corpus Christi	I n d .	Sun.aft. Pent.	1st Sun. Advent	Dom. Lett.	Lu na 14	Easter (Jul.)	D i ff.
0									
0									
3 8 0 1	31 Maij	11 Iunij	9	25	29 Nou.	e	25 M	30 M	1 4
3 8 0 2	23 Maij	3 Iunij	1 0	26	28 Nou.	d	13 A	19 A	4 2
3 8 0 3	12 Iunij	23 Iunij	1 1	23	27 Nou.	c	2 A	4 A	7
3 8 0 4	3 Iunij	14 Iunij	1 2	25	2 Dec.	b A	22 M	26 M	7
3 8 0 5	19 Maij	30 Iunij [recte: 30 Maij]	1 3	27	1 Dec.	g	10 A	15 A	4 2
3 8 0 6	8 Iunij	19 Iunij	1 4	24	30 Nou.	f	30 M	31 M	7
3 8 0 7	31 Maij	11 Iunij	1 5	25	29 Nou.	e	18 A	20 A	3 5
3 8 0	15 Maij	26 Maij	1	27	27 Nou.	d c	7 A	11 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sun.aft. Pent.	1st Sun. Advent	Dom. Lett.	Lu na 14	Easter (Jul.)	D i ff.
8									
3 8 0 9	4 Iunij	15 Iunij	2	25	3 Dec.	b	27 M	3 A	1 4
3 8 1 0	27 Maij	7 Iunij	3	26	2 Dec.	A	15 A	16 A	3 5
3 8 1 1	12 Maij	23 Maij	4	28	1 Dec.	g	4 A	8 A	4 2
3 8 1 2	31 Maij	11 Iunij	5	25	29 Nou.	f e	24 M	30 M	1 4
3 8 1 3	23 Maij	3 Iunij	6	26	28 Nou.	d	12 A	19 A	4 2
3 8 1 4	12 Iunij	23 Iunij	7	23	27 Nou.	c	1 A	4 A	7
3 8 1 5	28 Maii	8 Iunij	8	26	3 Dec.	b	21 M	27 M	1 4
3 8 1 6	19 Maij	30 Maij	9	27	1 Dec.	A g	9 A	15 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sun.aft. Pent.	1st Sun. Advent	Dom. Lett.	Lu na 14	Easter (Jul.)	D i ff.
3 8 1 7	8 Iunij	19 Iunij	1 0	24	30 Nou.	f	29 M	31 M	7
3 8 1 8	24 Maij	4 Iunij	1 1	26	29 Nou.	e	17 A	20 A	4 2
3 8 1 9	16 Maij	27 Maij	1 2	27	28 Nou.	d	5 A	12 A	4 2
3 8 2 0	4 Iunij	15 Iunij	1 3	25	3 Dec.	c b	25 M	27 M	7
3 8 2 1	20 Maij	31 Maij	1 4	27	2 Dec.	A	13 A	16 A	4 2
3 8 2 2	9 Iunij	20 Iunij	1 5	24	1 Dec.	g	2 A	8 A	1 4
3 8 2 3	1 Iunij	12 Iunij	1	25	30 Nou.	f	22 M	24 M	7
3 8 2 4	23 Maij	3 Iunij	2	26	28 Nou.	e d	10 A	12 A	3 5
3	5	16 Iunij	3	24	27 Nou.	c	30	4 A	1

A . D .	Pent ecost	Corpus Christi	I n d .	Sun.aft. Pent.	1st Sun. Advent	Dom. Lett.	Lu na 14	Easter (Jul.)	D i ff.
8 2 5	Iunij						M		4
3 8 2 6	28 Maij	8 Iunij	4	26	3 Dec.	b	18 A	24 A	4 2
3 8 2 7	20 Maij	31 Maij	5	27	2 Dec.	A	7 A	9 A	3 5
3 8 2 8	8 Iunij	19 Iunij	6	24	30 Nou.	g f	27 M	31 M	7
3 8 2 9	24 Maij	4 Iunij	7	26	29 Nou.	e	15 A	20 A	4 2
3 8 3 0	16 Maij	27 Maij	8	27	28 Nou.	d	4 A	5 A	3 5
3 8 3 1	5 Iunij	16 Iunij	9	24	27 Nou.	c	24 M	28 M	7
3 8 3 2	20 Maij	31 Maij	1 0	27	2 Dec.	b A	12 A	16 A	4 2
3 8	9 Iunij	20 Iunij	1 1	24	1 Dec.	g	1 A	8 A	1 4

A			I				Lu		D
.	Pent		n	Sun.aft.	1st Sun.	Dom.	na	Easter	i
.	ecost	Corpus Christi	.	Pent.	Advent	Lett.	14	(Jul.)	ff.
3									
3									
3	1	12 Iunij	1	25	30 Nou.	f	21	24 M	7
8	Iunij		2				M		
3									
4									
3	17	28 Maij	1	27	29 Nou.	e	9 A	13 A	4
8	Maij		3						2
3									
5									
3	5	16 Iunij	1	24	27 Nou.	d c	29	4 A	1
8	Iunij		4				M		4
3									
6									
3	28	8 Iunij	1	26	3 Dec.	b	17	24 A	4
8	Maij		5				A		2
3									
7									
3	13	24 Maij	1	28	2 Dec.	A	5 A	9 A	4
8	Maij								2
3									
8									
3	2	13 Iunij	2	25	1 Dec.	g	25	1 A	1
8	Iunij						M		4
3									
9									
**									

Folio 460 — New-Calendar (Gregorian) Leaf, A.D. 3840–3895

[Running head: CALEND. GREG. / TABVLA FESTORVM; page number 460 top left.]

Columns: **A.D.** [Anni Domini] · **Gold. No.** [Aur. Num.] · **Epact** [Epactæ] · **Dom. Lett. (Greg.)** [Lit. Dominicales Cal. Greg.] · **Mean full moon** [Plenilunia media

Cal. Gregor.], given as **day · hour · month** (D · H · Mo) · **Luna 14 (Greg.)** [Lunæ xiiij Cal. Gregoriani] · **Septuagesima · Ash Wed.** [Dies Cinerum] · **Easter (Greg.)** [Pascha Cal. novi] · **Ascension** [Ascensio Domini]

The hour (H) sub-column of the mean-full-moon is the smallest type on the leaf and does not always resolve on the scan; these hour figures are provisional and should not be treated as citation-grade. Uncertain H digits are marked [?].

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
3 8 4 0	3	xiiij	e d	31 · 4 · M	31 M	2 Feb.	19 Feb.	5 A	14 Maij
3 8 4 1	4	xxii ij	c	19 · 2 · A	18 A	21 Feb.	10 Mar.	25 A	3 Iunij
3 8 4 2	5	v	b	8 · 11 · A	8 A	6 Feb.	23 Feb.	10 A	19 Maij
3 8 4 3	6	xvj	A	28 · 20[?] · M	28 M	29 Ian.	15 Feb.	2 A	11 Maij
3 8 4 4	7	xxv ij	g f	15 · 17 · A	16 A	18 Feb.	6 Mar.	21 A	30 Maij
3 8 4 5	8	viii	e	5 · 2 · A	5 A	2 Feb.	19 Feb.	6 A	15 Maij
3 8 4 6	9	xix	d	25 · 11 · M	25 M	25 Ian.	11 Feb.	29 M	7 Maij

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
3 8 4 7	10	*	c	13 · 8 · A	13 A	14 Feb.	3 Mar.	18 A	27 Maij
3 8 4 8	11	xj	b A	1 · 17 · A	2 A	6 Feb.	23 Feb.	9 A	18 Maij
3 8 4 9	12	xxij	g	22 · 2 · M	22 M	21 Ian.	7 Feb.	25 M	3 Maij
3 8 5 0	13	ijj	f	9 · 23 · A	10 A	10 Feb.	27 Feb.	14 A	23 Maij
3 8 5 1	14	xiii	e	30 · 8[?] · M	30 M	2 Feb.	19 Feb.	6 A	15 Maij
3 8 5 2	15	25	d c	17 · 6 · A	17 A	15 Feb.	3 Mar.	18 A	27 Maij
3 8 5 3	16	vj	b	6 · 15 · A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
3 8 5 4	17	xvij	A	26 · 23 · M	27 M	29 Ian.	15 Feb.	2 A	11 Maij
3 8 5	18	xxv ijj	g	14 · 21 · A	15 A	18 Feb.	7 Mar.	22 A	31 Maij

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
5									
3 8 5 6	19	ix	f e	3 · 6 · A	4 A	3 Feb.	20 Feb.	6 A	15 Maij
3 8 5 7	1	xxi	d	23 · 15 · M	23 M	25 Ian.	11 Feb.	29 M	7 Maij
3 8 5 8	2	ii	c	11 · 12 · A	11 A	14 Feb.	3 Mar.	18 A	27 Maij
3 8 5 9	3	xiiij	b	31 · 21[?] · M	31 M	30 Ian.	16 Feb.	3 A	12 Maij
3 8 6 0	4	xxii ij	A g	18 · 18 · A	18 A	19 Feb.	7 Mar.	22 A	31 Maij
3 8 6 1	5	v	f	8 · 3 · A	8 A	10 Feb.	27 Feb.	14 A	23 Maij
3 8 6 2	6	xvi	e	28 · 12 · M	28 M	26 Ian.	12 Feb.	30 M	8 Maij
3 8 6 3	7	xxv ij	d	16 · 10 · A	16 A	15 Feb.	4 Mar.	19 A	28 Maij
3 8	8	viiij	c b	4 · 18 · A	5 A	7 Feb.	24 Feb.	10 A	19 Maij

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
6									
4									
3	9	xix	A	25 · 3 · M	25 M	22 Ian.	8 Feb.	26 M	4 Maij
8									
6									
5									
3	10	*	g	13 · 1 · A	13 A	11 Feb.	28 Feb.	15 A	24 Maij
8									
6									
6									
3	11	xj	f	2 · 10 · A	2 A	3 Feb.	20 Feb.	7 A	16 Maij
8									
6									
7									
3	12	xxii	e d	21 · 12[?] · M	22 M	26 Ian.	12 Feb.	29 M	7 Maij
8									
6									
8									
3	13	iiij	c	9 · 16 · A	10 A	7 Feb.	24 Feb.	11 A	20 Maij
8									
6									
9									
3	14	xiij	b	30 · 1 · M	30 M	30 Ian.	16 Feb.	3 A	12 Maij
8									
7									
0									
3	15	25	A	17 · 22 · A	17 A	19 Feb.	8 Mar.	23 A	1 Iunij
8									
7									
1									
3	16	vj	g f	6 · 7 · A	7 A	11 Feb.	28 Feb.	14 A	23 Maij
8									
7									
2									
3	17	xvii	e	26 · 16 · M	27 M	26	12	30	8 Maij

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
8 7 3						Ian.	Feb.	M	
3 8 7 4	18	xxv ij	d	14 · 14 · A	15 A	15 Feb.	4 Mar.	19 A	28 Maij
3 8 7 5	19	ix	c	3 · 22 · A	4 A	7 Feb.	24 Feb.	11 A	20 Maij
3 8 7 6	1	xxj	b A	23 · 7 · M	23 M	23 Ian.	9 Feb.	26 M	4 Maij
3 8 7 7	2	ij	g	11 · 5 · A	11 A	11 Feb.	28 Feb.	15 A	24 Maij
3 8 7 8	3	xiii	f	31 · 13[?] · M	31 M	3 Feb.	20 Feb.	7 A	16 Maij
3 8 7 9	4	xxii ii	e	19 · 11 · A	18 A	16 Feb.	5 Mar.	20 A	29 Maij
3 8 8 0	5	v	d c	7 · 20 · A	8 A	8 Feb.	25 Feb.	11 A	20 Maij
3 8 8 1	6	xvj	b	28 · 5 · M	28 M	30 Ian.	16 Feb.	3 A	12 Maij

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
3 8 8 2	7	xxv ij	A	16 · 2 · A	16 A	19 Feb.	8 Mar.	23 A	1 Iunij
3 8 8 3	8	viii	g	5 · 11 · A	5 A	4 Feb.	21 Feb.	8 A	17 Maij
3 8 8 4	9	xix	f e	24 · 20[?] · M	25 M	27 Ian.	13 Feb.	30 M	8 Maij
3 8 8 5	10	*	d	12 · 17 · A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
3 8 8 6	11	xi	c	2 · 2 · A	2 A	31 Ian.	17 Feb.	4 A	13 Maij
3 8 8 7	12	xxij	b	22 · 11 · M	22 M	23 Ian.	9 Feb.	27 M	5 Maij
3 8 8 8	13	iiij	A g	9 · 9 · A	10 A	12 Feb.	29 Feb.	15 A	24 Maij
3 8 8 9	14	xiiiij	f	29 · 17 · M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
3 8 9	15	25	e	17 · 15 · A	17 A	16 Feb.	5 Mar.	20 A	29 Maij

A. D.	Go ld.	Epa ct	Dom.L ett.	Full moon (D·H·Mo)	Lun a 14	Septu ag.	Ash Wed.	Eas ter	Ascens ion
0									
3 8 9 1	16	vi	d	7 · 0 · A	7 A	8 Feb.	25 Feb.	12 A	21 Maij
3 8 9 2	17	xvij	c b	26 · 9 · M	27 M	31 Ian.	17 Feb.	3 A	12 Maij
3 8 9 3	18	xxv iii	A	14 · 6 · A	15 A	12 Feb.	1 Mar.	16 A	25 Maij
3 8 9 4	19	ix	g	3 · 15 · A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
3 8 9 5	1	xxj	f	23 · 23 · M	23 M	20 Ian.	6 Feb.	24 M	2 Maij
**									

Folio 461 — Old-Calendar (Julian) Leaf, A.D. 3840–3895

[Running head left: CAPVT XXII. / MOBILIVM TEMPORARIA.; page number 461 top right.]

Columns as on folio 459 (Pentecost, Corpus, Indiction, Sundays-after-Pentecost, and Advent are Gregorian; the last four are the Julian "veteris" reckoning).

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
3	24	4 Iunij	3	26	29 Nou.	f e	13	20 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
8 4 0	Maij						A		
3 8 4 1	13 Iunij	24 Iunij	4	23	28 Nou.	d	2 A	5 A	7
3 8 4 2	29 Maij	9 Iunij	5	25	27 Nou.	c	22 M	28 M	14
3 8 4 3	21 Maij	1 Iunij	6	27	3 Dec.	b	10 A	17 A	42
3 8 4 4	9 Iunij	20 Iunij	7	24	1 Dec.	A g	30 M	1 A	7
3 8 4 5	25 Maij	5 Iunij	8	26	30 Nou.	f	18 A	21 A	42
3 8 4 6	17 Maij	28 Maij	9	27	29 Nou.	e	7 A	13 A	42
3 8 4 7	6 Iunij	17 Iunij	1 0	24	28 Nou.	d	27 M	29 M	7
3 8	28 Maij	8 Iunij	1 1	26	3 Dec.	c b	15 A	17 A	35

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
4 8									
3 8 4 9	13 Maij	24 Maij	1 2	28	2 Dec.	A	4 A	9 A	42
3 8 5 0	2 Iunij	13 Iunij	1 3	25	1 Dec.	g	24 M	25 M	7
3 8 5 1	25 Maij	5 Iunij	1 4	26	30 Nou.	f	12 A	14 A	35
3 8 5 2	6 Iunij	17 Iunij	1 5	24	28 Nou.	e d	1 A	5 A	14
3 8 5 3	29 Maij	9 Iunij	1	25	27 Nou.	c	21 M	28 M	14
3 8 5 4	21 Maij	1 Iunij	2	27	3 Dec.	b	9 A	10 A	35
3 8 5 5	10 Iunij	21 Iunij	3	24	2 Dec.	A	29 M	2 A	7
3 8 5	25 Maij	5 Iunij	4	26	30 Nou.	g f	17 A	21 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
6									
3 8 5 7	17 Maij	28 Maij	5	27	29 Nou.	e	5 A	6 A	35
3 8 5 8	6 Iunij	17 Iunij	6	24	28 Nou.	d	25 M	29 M	7
3 8 5 9	22 Maij	2 Iunij	7	26	27 Nou.	c	13 A	18 A	42
3 8 6 0	10 Iunij	21 Iunij	8	24	2 Dec.	b A	2 A	9 A	14
3 8 6 1	2 Iunij	13 Iunij	9	25	1 Dec.	g	22 M	25 M	7
3 8 6 2	18 Maij	29 Maij	1 0	27	30 Nou.	f	10 A	14 A	42
3 8 6 3	7 Iunij	18 Iunij	1 1	24	29 Nou.	e	30 M	6 A	14
3 8 6 4	29 Maij	9 Iunij	1 2	25	27 Nou.	d c	18 A	25 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
3 8 6 5	14 Maij	25 Maij	1 3	28	3 Dec.	b	7 A	10 A	42
3 8 6 6	3 Iunij	14 Iunij	1 4	25	2 Dec.	A	27 M	2 A	14
3 8 6 7	26 Maij	6 Iunij	1 5	26	1 Dec.	g	15 A	22 A	42
3 8 6 8	17 Maij	28 Maij	1	27	29 Nou.	f e	4 A	6 A	35
3 8 6 9	30 Maij	10 Iunij	2	25	28 Nou.	d	24 M	29 M	14
3 8 7 0	22 Maij	2 Iunij	3	26	27 Nou.	c	12 A	18 A	42
3 8 7 1	11 Iunij	22 Iunij	4	24	3 Dec.	b	1 A	3 A	7
3 8 7 2	2 Iunij	13 Iunij	5	25	1 Dec.	A g	21 M	25 M	7
3	18	29 Maij	6	27	30 Nou.	f	9 A	14 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
8 7 3	Maii								
3 8 7 4	7 Iunij	18 Iunij	7	24	29 Nou.	e	29 M	30 M	7
3 8 7 5	30 Maij	10 Iunij	8	25	28 Nou.	d	17 A	19 A	35
3 8 7 6	14 Maij	25 Maij	9	28	3 Dec.	c b	5 A	10 A	42
3 8 7 7	3 Iunij	14 Iunij	1 0	25	2 Dec.	A	25 M	26 M	7
3 8 7 8	26 Maij	6 Iunij	1 1	26	1 Dec.	g	13 A	15 A	35
3 8 7 9	8 Iunij	19 Iunij	1 2	24	30 Nou.	f	2 A	7 A	14
3 8 8 0	30 Maij	10 Iunij	1 3	25	28 Nou.	e d	22 M	29 M	14
3 8	22 Maij	2 Iunij	1 4	26	27 Nou.	c	10 A	11 A	35

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
8 1									
3 8 8 2	11 Iunij	22 Iunij	1 5	24	3 Dec.	b	30 M	3 A	7
3 8 8 3	27 Maij	7 Iunij	1	26	2 Dec.	A	18 A	23 A	42
3 8 8 4	18 Maij	29 Maij	2	27	30 Nou.	g f	7 A	14 A	42
3 8 8 5	7 Iunij	18 Iunij	3	24	29 Nou.	e	27 M	30 M	7
3 8 8 6	23 Maij	3 Iunij	4	26	28 Nou.	d	15 A	19 A	42
3 8 8 7	15 Maij	26 Maij	5	27	27 Nou.	c	4 A	11 A	42
3 8 8 8	3 Iunij	14 Iunij	6	25	2 Dec.	b A	24 M	26 M	7
3 8 8	19 Maij	30 Maij	7	27	1 Dec.	g	12 A	15 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sun.aft.P ent.	1st Sun. Advent	Dom. Lett.	Lun a 14	Easter (Jul.)	Di ff.
9									
3 8 9 0	8 Iunij	19 Iunij	8	24	30 Nou.	f	1 A	7 A	14
3 8 9 1	31 Maij	11 Iunij	9	25	29 Nou.	e	21 M	23 M	7
3 8 9 2	22 Maij	2 Iunij	1 0	26	27 Nou.	d c	9 A	11 A	35
3 8 9 3	4 Iunij	15 Iunij	1 1	25	3 Dec.	b	29 M	3 A	14
3 8 9 4	27 Maij	7 Iunij	1 2	26	2 Dec.	A	17 A	23 A	42
3 8 9 5	12 Maij	23 Maij	1 3	28	1 Dec.	g	5 A	8 A	42

**

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The perpetual table of the movable feasts (A.D. 1600–5000), continued. This span covers A.D. 3896–4007. The first opening (printed pp. 462–463) presents one

continuous row-block across both leaves: the left leaf gives the new-calendar (Gregorian) columns, the right leaf the Sundays-after-Pentecost / first-Sunday-of-Advent block and the old-calendar (Julian, "veteris") columns. The following left leaf (printed p. 464) resumes the new-calendar columns for A.D. 3952–4007; its facing old-calendar leaf falls on the next page.

Month letters in the astronomical columns: **M** = March (Martius), **A** = April (Aprilis). Feast-date months are transcribed verbatim as printed per cell (Ian. / Feb. / Febr. / Mar. / Mart. / Maij / Maii / Iunij / Iunii / Nou. / Dec.). The golden-number 15 epact is set in Arabic 25 (column-scoped Arabic), all other epacts in Roman; the epact-30 sort is the asterisk *. Roman/Arabic and i-/j-terminal sorts are preserved as printed.

[printed p. 462] CALEND. GREG. — TABVLA FESTORVM MOBILIVM (new-calendar leaf, A.D. 3896–3951)

Columns: A.D. year | Aur. Num. (golden number) | Epactæ (epact) | Lit. Dominicales Cal. Greg. (Gregorian dominical letter[s]; two in leap years) | Plenilunia media Cal. Gregor. — mean full moon: D (day), H (hour), mo. (month letter) | Lunæ xiiij Cal. Gregoriani (14th day of the moon) | Septuagesima | Dies Cinerum (Ash Wednesday) | Pascha Calend. novi (Easter, new calendar) | Ascensio Domini (Ascension).

A.	G	Epac	D o	F M	F M	FM	Luna	Septuagesi	Ash	East	Ascensi
D.	N	t	m.	D	H	mo	14	ma	Wed.	er	on
38 96	2	ij	e d	10	21	A	11 A	9 Feb.	26 Feb.	12 A	21 Maij
38 97	3	xijj	c	31	6	M	31 M	31 Ian.	17 Feb.	4 A	13 Maij
38 98	4	xxiii j	b	19	3	A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
38 99	5	v	A	8	12	A	8 A	5 Feb.	22 Feb.	9 A	18 Maij
39 00	6	xvj	g	29	21	M	28 M	28 Ian.	14 Feb.	1 A	10 Maij
39 01	7	xxvij	f	16	19	A	16 A	17 Feb.	6 Mar.	21 A	30 Maij
39	8	viiij	e	6	3	A	5 A	2 Feb.	19 Feb.	6 A	15 Maij

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
02										
39	9 xix	d	26	12	M	25 M	25 Ian.	11 Feb.	29 M	7 Maij
03										
39	1 *	c	13	10	A	13 A	14 Feb.	2 Mar	17 A	26 Maij
04	0	b								
39	1 xj	A	2	19	A	2 A	5 Feb.	22 Feb.	9 A	18 Maij
05	1									
39	1 xxij	g	23	3	M	22 M	21 Ian.	7 Feb.	25 M	3 Maij
06	2									
39	1 iij	f	11	1	A	10 A	10 Feb.	27 Feb.	14 A	23 Maij
07	3									
39	1 xiiij	e	30	10	M	30 M	2 Feb.	19 Feb.	5 A	14 Maij
08	4	d								
39	1 25	c	18	7	A	17 A	14 Feb.	3 Mar.	18 A	27 Maij
09	5									
39	1 vj	b	7	16	A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
10	6									
39	1 xvij	A	28	1	M	27 M	29 Ian.	15 Feb.	2 A	11 Maij
11	7									
39	1 xxvii	g f	14	23	A	15 A	18 Feb.	6 Mar.	21 A	30 Maij
12	8 j									
39	1 ix	e	4	7	A	4 A	2 Feb.	19 Feb.	6 A	15 Maij
13	9									
39	1 xxj	d	24	16	M	23 M	25 Ian.	11 Feb.	29 M	7 Maij
14										
39	2 ij	c	12	14	A	11 A	14 Feb.	3 Mar.	18 A	27 Maij
15										
39	3 xiiij	b	31	23	M	31 M	30 Ian.	16 Feb.	2 A	11 Maij
16		A								
39	4 xxiii	g	19	20	A	18 A	18 Feb.	7 Mar.	22 A	31 Maij
17	j									
39	5 v	f	9	5	A	8 A	10 Feb.	27 Feb	14 A	23 Maij

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
18										
39 19	6 xvj	e	29	14	M	28 M	26 Ian.	12 Feb.	30 M	8 Maij
39 20	7 xxvij	d c	16	11	A	16 A	15 Feb.	3 Mar.	18 A	27 Maij
39 21	8 viij	b	5	20	A	5 A	6 Feb.	23 Feb.	10 A	19 Maij
39 22	9 xix	A	26	5	M	25 M	22 Ian.	8 Feb.	26 M	4 Maij
39 23	1 *	g	14	2	A	13 A	11 Feb.	28 Feb.	15 A	24 Maij
39 24	1 xj	f e	2	11	A	2 A	3 Feb.	20 Feb.	6 A	15 Maij
39 25	1 xxij	d	22	20	M	22 M	25 Ian.	11 Feb.	29 M	7 Maij
39 26	1 iij	c	10	18	A	10 A	7 Feb.	24 Feb.	11 A	20 Maij
39 27	1 xiiij	b	31	2	M	30 M	30 Ian.	16 Feb.	3 A	12 Maij
39 28	1 25	A g	18	0	A	17 A	19 Feb.	7 Mar.	22 A	31 Maij
39 29	1 vj	f	7	9	A	7 A	10 Feb.	27 Feb.	14 A	23 Maij
39 30	1 xvij	e	27	18	M	27 M	26 Ian.	12 Feb.	30 M	8 Maij
39 31	1 xxvii	d	15	15	A	15 A	15 Feb.	4 Mar.	19 A	28 Maij
39 32	1 ix	c b	4	0	A	4 A	7 Feb.	24 Feb.	10 A	19 Maij
39 33	1 xxj	A	24	9	M	23 M	22 Ian.	8 Feb.	26 M	4 Maij
39	2 ij	g	12	6	A	11 A	11 Feb.	28 Feb.	15 A	24 Maij

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuages ma	Ash Wed.	East er	Ascensi on
34										
39	3 xiiij	f	1	15	A	31 M	3 Feb.	20 Feb.	7 A	16 Maij
35										
39	4 xxiii	e	19	13	A	18 A	16 Feb.	4 Mar.	19 A	28 Maij
36	j	d								
39	5 v	c	8	21	A	8 A	7 Feb.	24 Feb.	11 A	20 Maij
37										
39	6 xvj	b	29	6	M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
38										
39	7 xxvij	A	17	4	A	16 A	19 Feb.	8 Mar.	23 A	1 Iunij
39										
39	8 viij	g f	5	13	A	5 A	4 Feb.	21 Feb.	7 A	16 Maij
40										
39	9 xix	e	25	21	M	25 M	26 Ian.	12 Feb.	30 M	8 Maij
41										
39	1 *	d	13	19	A	13 A	15 Feb.	4 Mar.	19 A	28 Maij
42	0									
39	1 xj	c	3	4	A	2 A	31 Ian.	17 Feb.	4 A	13 Maij
43	1									
39	1 xxij	b	22	13	M	22 M	23 Ian.	9 Feb.	26 M	4 Maij
44	2	A								
39	1 iij	g	10	10	A	10 A	11 Feb.	28 Feb.	15 A	24 Maij
45	3									
39	1 xiiij	f	30	19	M	30 M	27 Ian.	13 Feb.	31 M	9 Maij
46	4									
39	1 25	e	18	16	A	17 A	16 Feb.	5 Mar.	20 A	29 Maij
47	5									
39	1 vj	d	7	1	A	7 A	8 Feb.	25 Feb.	11 A	20 Maij
48	6	c								
39	1 xvij	b	27	10	M	27 M	30 Ian.	16 Feb.	3 A	12 Maij
49	7									
39	1 xxvii	A	15	8	A	15 A	12 Feb.	1 Mar.	16 A	25 Maij

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuages ma	Ash Wed.	East er	Ascensi on
50	8 j									
39	1 ix	g	4	16	A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
51	9									

[printed p. 463] CAPVT XXII. — MOBILIVM TEMPORARIA
(feast / old-calendar leaf, A.D. 3896–3951)

This leaf continues the same rows (A.D. 3896–3951). Columns: A.D. year | Pentecoste (Pentecost) | Corpus Domini (Corpus Christi) | Indictio (indiction) | Dñicæ post Pentecosten (Sundays after Pentecost) | Dominica prima Aduentus (First Sunday of Advent) | Literæ Dominicales Cal. veteris (old-calendar / Julian dominical letter[s]) | Lunæ xiiij Cal. veteris (14th day of the moon, old calendar) | Pascha Calendarij veteris (Easter, old calendar) | Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt (days by which new-calendar Easter differs from old-calendar Easter).

A. D.	Pent ecost	Corpus Christi	Ind ict.	Sund. post Pent.	1st Adve nt	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
3 8 9 6	31 Maij	11 Iunij	14	25	29 Nou.	f e	25 M	30 M	1 4
3 8 9 7	23 Maij	3 Iunij	15	26	28 Nou.	d	13 A	19 A	4 2
3 8 9 8	12 Iunij	23 Iunij	1	23	27 Nou.	c	2 A	4 A	7
3 8 9	28 Maij	8 Iunij	2	26	3 Dec.	b	22 M	27 M	1 4

A . D .	Pent ecost	Corpus Christi	Ind ict.	Sund. Pent.	post	1st Adve nt	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
9										
3 9 0 0	20 Maij	31 Maij	3	27		2 Dec.	A g	10 A	15 A	4 2
3 9 0 1	9 Iunij	20 Iunij	4	24		1 Dec.	f	30 M	31 M	7
3 9 0 2	25 Maij	5 Iunij	5	26		30 Nou.	e	18 A	20 A	4 2
3 9 0 3	17 Maij	28 Maij	6	27		29 Nou.	d	7 A	12 A	4 2
3 9 0 4	5 Iunij	16 Iunij	7	24		27 Nou.	ç b	27 M	3 A	1 4
3 9 0 5	28 Maij	8 Iunij	8	26		3 Dec.	A	15 A	16 A	3 5
3 9 0 6	13 Maij	24 Maij	9	28		2 Dec.	g	4 A	8 A	4 2
3 9 0 7	2 Iunij	13 Iunij	10	25		1 Dec.	f	24 M	31 M	1 4

A						1st				
D	Pent	Corpus	Ind	Sund.	post	Adve	Dom.	Luna 14	Easter	Di
.	ecost	Christi	ict.	Pent.		nt	(old)	(old)	(old)	ff.
3	24	4 Iunij	11	26		29	e d	12 A	19 A	4
9	Maij					Nou.				2
0										
8										
3	6	17 Iunij	12	24		28	c	1 A	4 A	1
9	Iunij					Nou.				4
0										
9										
3	29	9 Iunij	13	25		27	b	21 M	27 M	1
9	Maij					Nou.				4
1										
0										
3	21	1 Iunij	14	27		3 Dec.	A	9 A	16 A	4
9	Maij									2
1										
1										
3	9	20 Iunij	15	24		1 Dec.	g f	29 M	31 M	7
9	Iunij									
1										
2										
3	25	5 Iunij	1	26		30	e	17 A	20 A	4
9	Maij					Nou.				2
1										
3										
3	17	28 Maij	2	27		29	d	5 A	12 A	4
9	Maij					Nou.				2
1										
4										
3	6	17 Iunij	3	24		28	c	25 M	28 M	7
9	Iunij					Nou.				
1										
5										
3	21	1 Iunij	4	27		3 Dec.	b A	13 A	16 A	4

A										
.	D	Pent	Corpus	Ind	Sund. post	1st	Dom.	Luna 14	Easter	Di
.	.	ecost	Christi	ict.	Pent.	Adve	(old)	(old)	(old)	ff.
9	1	Maij								2
6										
3	10	21 Iunij	5	24		2 Dec.	g	2 A	8 A	1
9	Iunij									4
1										
7										
3	2	13 Iunij	6	25		1 Dec.	f	22 A	24 M	7
9	Iunij									
1										
8										
3	18	29 Maij	7	27		30	e	10 A	13 A	4
9	Maij					Nou.				2
1										
9										
3	6	17 Iunij	8	24		28	d c	30 M	4 A	1
9	Iunij					Nou.				4
2										
0										
3	29	9 Iunij	9	25		27	b	18 A	24 A	4
9	Maij					Nou.				2
2										
1										
3	14	25 Maij	10	28		3 Dec.	A	7 A	9 A	4
9	Maij									2
2										
2										
3	3	14 Iunij	11	25		2 Dec.	g	27 M	1 A	1
9	Iunij									4
2										
3										
3	25	5 Iunij	12	26		30	f e	15 A	20 A	4
9	Maij					Nou.				2

A . D .	Pent ecost	Corpus Christi	Ind ict.	Sund. Pent.	post	1st Adve nt	Dom. (old)	Luna 14 (old)	Easter (old)	Di ff.
2										
4										
3 9 2 5	17 Maij	28 Maij	13	27		29 Nou.	d	4 A	5 A	3 5
3 9 2 6	30 Maij	10 Iunij	14	25		28 Nou.	c	24 M	28 M	1 4
3 9 2 7	22 Maij	2 Iunij	15	26		27 Nou.	b	12 A	17 A	4 2
3 9 2 8	10 Iunij	21 Iunij	1	24		2 Dec.	A g	1 A	8 A	1 4
3 9 2 9	2 Iunij	13 Iunij	2	25		1 Dec.	f	21 M	24 M	7
3 9 3 0	18 Maij	29 Maij	3	27		30 Nou.	e	9 A	13 A	4 2
3 9 3 1	7 Iunij	18 Iunij	4	24		29 Nou.	d	29 M	5 A	1 4
3 9 3	29 Maij	9 Iunij	5	25		27 Nou.	c b	17 A	24 A	4 2

A										
.	D	Pent	Corpus	Ind	Sund. post	1st	Dom.	Luna 14	Easter	Di
.	.	ecost	Christi	ict.	Pent.	Adve	(old)	(old)	(old)	ff.
3	18	29 Maij	14	27		30	e	7 A	13 A	4
9	Maij					Nou.				2
4										
1										
3	7	18 Iunij	15	24		29	d	27 M	29 M	7
9	Iunij					Nou.				
4										
2										
3	23	3 Iunij	1	26		28	c	15 A	18 A	4
9	Maij					Nou.				2
4										
3										
3	14	25 Maij	2	28		3 Dec.	b A	4 A	9 A	4
9	Maij									2
4										
4										
3	3	14 Iunij	3	25		2 Dec.	g	24 M	25 M	7
9	Iunij									
4										
5										
3	19	30 Maij	4	27		1 Dec.	f	12 A	14 A	4
9	Maij									2
4										
6										
3	8	19 Iunij	5	24		30	e	1 A	6 A	1
9	Iunij					Nou.				4
4										
7										
3	30	10 Iunij	6	25		28	d c	21 M	28 M	1
9	Maij					Nou.				4
4										
8										
3	22	2 Iunii	7	26		27	b	9 A	10 A	3

A						1st				
.						Adve	Dom.	Luna 14	Easter	Di
D	Pent	Corpus	Ind	Sund.	post	nt	(old)	(old)	(old)	ff.
.	ecost	Christi	ict.	Pent.						
9	Maij					Nou.				5
4										
9										
3	4	15 Iunij	8	25		3 Dec.	A	29 M	2 A	1
9	Iunij									4
5										
0										
3	27	7 Iunii	9	26		2 Dec.	g	17 A	22 A	4
9	Maij									2
5										
1										

[printed p. 464] CALEND. GREG. — TABVLA FESTORVM
MOBILIVM (new-calendar leaf, A.D. 3952–4007)

Same columns as printed p. 462. The facing old-calendar leaf for these years falls on the next page. On this leaf the feast months are predominantly set Febr. / Mart. (vs Febr. / Mar. on p. 462); transcribed per cell as printed.

		D	F	F						
A.	G Epac	o	M	M	FM	Luna	Septuages	Ash	East	Ascensi
D.	N t	m.	D	H	mo	14	ma	Wed.	er	on
39	1 xxj	f e	24	1	M	23 M	27 Ian.	13	30 M	8 Maij
52								Febr.		
39	2 ij	d	11	23	A	11 A	8 Febr.	25	12 A	21 Maij
53								Febr.		
39	3 xiiij	c	1	8	A	31 M	31 Ian.	17	4 A	13 Maij
54								Febr.		
39	4 xxiii	b	20	5	M	18 A	20 Febr	9 Mart.	24 A	2 Iunij
55	j									
39	5 v	A	8	14	A	8 A	12 Febr.	29	15 A	24 Maij
56		g						Febr.		

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
39 57	6 xvj	f	28	23	M	28 M	27 Ian.	13 Febr.	31 M	9 Maij
39 58	7 xxvij	e	16	20	A	16 A	16 Febr.	5 Mart.	20 A	29 Maij
39 59	8 viij	d	6	5	A	5 A	8 Febr.	25 Febr.	12 A	21 Maij
39 60	9 xix	c b	25	14	M	25 M	24 Ian.	10 Febr.	27 M	5 Maij
39 61	1 *	A	13	12	A	13 A	12 Febr.	1 Mart.	16 A	25 Maij
39 62	1 xj	g	2	20	A	2 A	4 Febr.	21 Febr.	8 A	17 Maij
39 63	1 xxij	f	23	5	M	22 M	20 Ian.	6 Feb.	24 M	2 Maij
39 64	1 iij	e d	10	3	A	10 A	9 Febr.	26 Febr.	12 A	21 Maij
39 65	1 xiiij	c	30	11	M	30 M	31 Ian.	17 Febr.	4 A	13 Maij
39 66	1 25	b	18	9	A	17 A	20 Febr.	9 Mart.	24 A	2 Iunij
39 67	1 vj	A	7	18	A	7 A	5 Febr.	22 Febr.	9 A	18 Maij
39 68	1 xvij	g f	27	3	M	27 M	28 Ian.	14 Febr.	31 M	9 Maij
39 69	1 xxvii	e	15	0	A	15 A	16 Febr.	5 Mart.	20 A	29 Maij
39 70	1 ix	d	4	9	A	4 A	1 Febr.	18 Febr.	5 A	14 Maij
39 71	1 xxj	c	24	18	M	23 M	24 Ian.	10 Febr.	28 M	6 Maij
39 72	2 ij	b A	11	15	A	11 A	13 Febr.	1 Mart.	16 A	25 Maii

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuagesima	Ash Wed.	East er	Ascensi on
39 73	3 xiiij	g	1	0	A	31 M	28 Ian.	14 Febr.	1 A	10 Maij
39 74	4 xxiii j	f	19	22	A	18 A	17 Febr.	6 Mar.	21 A	30 Maij
39 75	5 v	e	9	6	A	8 A	9 Febr.	26 Febr.	13 A	22 Maij
39 76	6 xvj	d c	28	15	M	28 M	1 Febr.	18 Febr.	4 A	13 Maij
39 77	7 xxvij	b	16	13	A	16 A	13 Febr.	2 Mar.	17 A	26 Maij
39 78	8 viij	A	5	22	A	5 A	5 Febr.	22 Febr.	9 A	18 Maij
39 79	9 xix	g	26	6	M	25 M	28 Ian.	14 Febr.	1 A	10 Maij
39 80	1 * 0	f e	13	4	A	13 A	17 Febr.	5 Mar.	20 A	29 Maij
39 81	1 xj 1	d	2	13	A	2 A	1 Febr.	18 Febr.	5 A	14 Maij
39 82	1 xxij 2	c	22	22	M	22 M	24 Ian.	10 Febr.	28 M	6 Maij
39 83	1 iij 3	b	10	19	A	10 A	13 Febr.	2 Mar.	17 A	26 Maij
39 84	1 xiiij 4	A g	30	4	M	30 M	29 Ian.	15 Febr.	1 A	10 Maij
39 85	1 25 5	f	18	1	A	17 A	17 Febr.	6 Mart.	21 A	30 Maij
39 86	1 vj 6	e	7	11	A	7 A	9 Febr.	26 Febr.	13 A	22 Maij
39 87	1 xvij 7	d	27	19	M	27 M	25 Ian.	11 Febr.	29 M	7 Maij
39 88	1 xxvii 8 j	c b	14	17	A	15 A	14 Febr.	2 Mart.	17 A	26 Maij

A. D.	G Epac N t	D o m.	F M D	F M H	FM mo	Luna 14	Septuages ma	Ash Wed.	East er	Ascensi on
39 89	1 ix 9	A	4	2	A	4 A	5 Febr.	22 Febr.	9 A	18 Maij
39 90	1 xxj	g	24	10	M	23 M	21 Ian.	7 Febr.	25 M	3 Maij
39 91	2 ij	f	12	8	A	11 A	10 Febr.	27 Febr.	14 A	23 Maij
39 92	3 xiiij	e d	31	17	M	31 M	2 Febr.	19 Febr.	5 A	14 Maij
39 93	4 xxiii j	c	19	14	A	18 A	21 Febr.	10 Mart.	25 A	3 Iunij
39 94	5 v	b	8	23	A	8 A	6 Febr.	23 Febr.	10 A	19 Maij
39 95	6 xvj	A	29	8	M	28 M	29 Ian.	15 Febr.	2 A	11 Maii
39 96	7 xxvij	g f	16	5	A	16 A	18 Febr.	6 Mart.	21 A	30 Maij
39 97	8 viij	e	5	14	A	5 A	2 Febr.	19 Febr.	6 A	15 Maij
39 98	9 xix	d	25	23	M	25 M	25 Ian.	11 Febr.	29 M	7 Maij
39 99	1 * 0	c	13	21	A	13 A	14 Febr.	3 Mart.	18 A	27 Maij
40 00	1 xj 1	b A	2	5	A	2 A	6 Febr.	23 Febr.	9 A	18 Maij
40 01	1 xxij 2	g	22	14	M	22 M	21 Ian.	7 Febr.	25 M	3 Maij
40 02	1 iij 3	f	10	12	A	10 A	10 Febr.	27 Febr.	14 A	23 Maij
40 03	1 xiiij 4	e	30	21	M	30 M	2 Febr.	19 Febr.	6 A	15 Maij
40 04	1 25 5	d c	17	18	A	17 A	15 Febr.	3 Mart.	18 A	27 Maij

A.	G Epac	D	F	F	FM	Luna	Septuagesima	Ash	East	Ascensi
D.	N t	o m.	M D	M H	mo	14	ma	Wed.	er	on
40 05	1 vj 6	b	7	3	A	7 A	6 Febr.	23 Febr.	10 A	19 Maij
40 06	1 xvij 7	A	27	12	M	27 M	29 Ian.	15 Febr.	2 A	11 Maij
40 07	1 xxvii 8 j	g	15	9	A	15 A	18 Febr.	7 Mart.	22 A	31 Maij

CAPUT XXII — Table of the Movable Feasts, arranged by year (*Tabula Festorum Mobilium Temporaria*), 1600–5000 (continued)

*These three leaves continue the great year-by-year table of the movable feasts. Each period of the calendar is set as a facing pair: a **Gregorian (new-calendar)** leaf and an **old-calendar (veteris)** leaf covering the same span of years. This batch holds the old-calendar leaf for A.D. 3952–4007 (folio 465), then the Gregorian and old-calendar pair for A.D. 4008–4063 (folios 466–467).*

*Column conventions, preserved verbatim from the print: month abbreviations are given exactly as set per cell (Maij/Maii, Iunij/Iunii, Nou., Dec., Ian., Febr./Feb., Mart./Mar.); the single letters in the Moon-14 / Easter / mean-full-moon columns are the month of the event — A = Aprilis (April), M = Martius (March). Epacts keep their printed Roman/Arabic form and i-/j-terminal sorts (xxj, xxvii, xiiii vs xiiij, vj vs vi); the epact-30 asterisk is rendered *. In leap years the Dominical-letter column carries two letters (January–February letter, then March–December letter).*

Folio 465 — old-calendar leaf (MOBILIVM TEMPORARIA), A.D. 3952–4007

Running head: CAPVT XXII. / MOBILIVM TEMPORARIA. The first three feast columns (Pentecost, Corpus Christi, first Sunday of Advent, with the Indiction and Sundays-after-Pentecost) are the Gregorian movable-feast dates; the last four columns give the old-calendar (Julian) Dominical letters, Paschal full moon, Easter, and the number of days by which the new-calendar Easter differs from the old.

A . D .	Pentecost	Corpus Christi	I n d .	Sun. p. Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff
3 9 5 2	18 Maij	29 Maij	1 0	27	30 No u.	f e	5 A	6 A	3 5
3 9 5 3	31 Maij	11 Iunij	1 1	25	29 No u.	d	25 M	29 M	1 4
3 9 5 4	23 Maij	3 Iunij	1 2	26	28 No u.	c	13 A	18 A	4 2
3 9 5 5	12 Iunij	23 Iunij	1 3	23	27 No u.	b	2 A	3 A	7
3 9 5 6	3 Iunij	14 Iunij	1 4	25	2 De c.	A g	22 M	25 M	7
3 9 5 7	19 Maij	30 Maij	1 5	27	1 De c.	f	10 A	14 A	4 2
3 9 5 8	8 Iunij	19 Iunij	1	24	30 No u.	e	30 M	6 A	1 4
3 9 5 9	31 Maij	11 Iunij	2	25	29 No u.	d	18 A	19 A	3 5
3	15 Maij	26 Maij	3	27	27	ç b	7 A	10 A	4

A . D . Pentecost	Corpus Christi	I n d . Sun. p. Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
9 6 0			No u.				2
3 4 Iunij 9 6 1	15 Iunij	4 25	3 De c.	A	27 M	2 A	1 4
3 27 Maij 9 6 2	7 Iunii	5 26	2 De c.	g	15 A	22 A	4 2
3 12 Maij 9 6 3	23 Maii	6 28	1 De c.	f	4 A	7 A	4 2
3 31 Maij 9 6 4	11 Iunij	7 25	29 No u.	e d	24 M	29 M	1 4
3 23 Maij 9 6 5	3 Iunij	8 26	28 No u.	c	12 A	18 A	4 2
3 12 Iunij 9 6 6	23 Iunij	9 23	27 No u.	b	1 A	3 A	7
3 28 Maij 9 6 7	8 Iunij	1 26 0	3 De c.	A	21 M	26 M	1 4
3 19 Maij 9	30 Maij	1 27 1	1 De	g f	9 A	14 A	4 2

A . D . Pentecost	Corpus Christi	I n d . Sun. p. Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
6 8 3 9 6 9 3 9 7 0 3 9 7 1 3 9 7 2 3 9 7 3 3 9 7 4 3 9 7 5 3 9 7 6				c.			
8 Iunij	19 Iunij	1 24 2	30 No u.	e	29 M	30 M	7
24 Maij	4 Iunij	1 26 3	29 No u.	d	17 A	19 A	4 2
16 Maij	27 Maij	1 27 4	28 No u.	c	5 A	11 A	4 2
4 Iunij	15 Iunij	1 25 5	3 De c.	b A	25 M	26 M	7
20 Maij	31 Maij	1 27	2 De c.	g	13 A	15 A	4 2
9 Iunij	20 Iunij	2 24	1 De c.	f	2 A	7 A	1 4
1 Iunij	12 Iunij	3 25	30 No u.	e	22 M	23 M	7
23 Maij	3 Iunij	4 26	28 No u.	d c	10 A	11 A	3 5

A . D . Pentecost	Corpus Christi	I n d . Sun. p. Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
6							
3 5 Iunij 9 7 7	16 Iunij	5 24	27 No u.	b	30 M	3 A	1 4
3 28 Maij 9 7 8	8 Iunij	6 26	3 De c.	A	18 A	23 A	4 2
3 20 Maij 9 7 9	31 Maij	7 27	2 De c.	g	7 A	8 A	3 5
3 8 Iunij 9 8 0	19 Iunij	8 24	30 No u.	f e	27 M	30 M	7
3 24 Maij 9 8 1	4 Iunij	9 26	29 No u.	d	15 A	19 A	4 2
3 16 Maij 9 8 2	27 Maij	1 27 0	28 No u.	c	4 A	11 A	4 2
3 5 Iunij 9 8 3	16 Iunij	1 24 1	27 No u.	b	24 M	27 M	7
3 20 Maij 9 8 4	31 Maij	1 27 2	2 De c.	A g	12 A	15 A	4 2

A . D . Pentecost	Corpus Christi	I n d . Sun. p. Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
3 9 Iunij 9 8 5	20 Iunij	1 24 3	1 De c.	f	1 A	7 A	1 4
3 1 Iunij 9 8 6	12 Iunij	1 25 4	30 No u.	e	21 M	23 M	7
3 17 Maij 9 8 7	28 Maij	1 27 5	29 No u.	d	9 A	12 A	4 2
3 5 Iunij 9 8 8	16 Iunij	1 24	27 No u.	c b	29 M	3 A	1 4
3 28 Maij 9 8 9	8 Iunij	2 26	3 De c.	A	17 A	23 A	4 2
3 13 Maij 9 9 0	24 Maij	3 28	2 De c.	g	5 A	8 A	4 2
3 2 Iunij 9 9 1	13 Iunij	4 25	1 De ç.	f	25 M	31 M	1 4
3 24 Maij 9 9 2	4 Iunij	5 26	29 No u.	e d	13 A	19 A	4 2
3 13 Iunij	24 Iunij	6 23	28	c	2 A	4 A	7

A . D . Pentecost	Corpus Christi	I n d . Sun. p. Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
9 9 3			No u.				
3 9 9 4	29 Maij	9 Iunij	7 25	27 b No u.	22 M	27 M	1 4
3 9 9 5	21 Maij	1 Iunij	8 27	3 A De c.	10 A	16 A	4 2
3 9 9 6	9 Iunij	20 Iunij	9 24	1 g f De c.	30 M	31 M	7
3 9 9 7	25 Maij	5 Iunij	1 26 0	30 e No u.	18 A	20 A	4 2
3 9 9 8	17 Maij	28 Maij	1 27 1	29 d No u.	7 A	12 A	4 2
3 9 9 9	6 Iunij	17 Iunij	1 24 2	28 c No u.	27 M	28 M	7
4 0 0 0	28 Maij	8 Iunij	1 26 3	3 b A De c.	15 A	16 A	3 5
4 0	13 Maij	24 Maij	1 28 4	2 g De	4 A	8 A	4 2

A . D . Pentecost	Corpus Christi	I n d Sun. p. . Pent.	Ad ve nt I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
0			c.				
1							
4 2 Iunij	13 Iunij	1 25	1 f		24 M	31 M	1
0		5	De				4
0			c.				
2							
4 25 Maij	5 Iunij	1 26	30 e		12 A	13 A	3
0			No				5
0			u.				
3							
4 6 Maij	17 Maij	2 24	28 d c		1 A	4 A	1
0 [recte: Iunij]	[recte: Iunij]		No				4
0			u.				
4							
4 29 Maij	9 Iunij	3 25	27 b		21 M	27 M	1
0			No				4
0			u.				
5							
4 21 Maij	1 Iunij	4 27	3 A		9 A	16 A	4
0			De				2
0			c.				
6							
4 10 Iunij	21 Iunij	5 24	2 g		29 M	1 A	7
0			De				
0			c.				
7							

Folio 466 — Gregorian leaf (CALEND. GREG. / TABVLA FESTORVM
[MOBILIVM]), A.D. 4008–4063

Running head: 466 (left) / CALEND. GREG. (centre); band title TABVLA FESTORVM. The mean-full-moon column is set D. (day) · H. (hour) · month-letter; the hour sub-column is the smallest type on the page (see the note below).

A D .	Gol d. No.	E p a ct	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
4 0 0 8	19	i x	f e	3 · 18 · A	4 A	3 Febr.	20 Febr.	6 A	15 Ma ij
4 0 0 9	1	x xj	d	24 · 3 · M	23 M	25 Ian.	11 Febr.	29 M	7 Ma ij
4 0 1 0	2	ij	c	12 · 0 · A	11 A	14 Febr.	3 Mart.	18 A	27 Ma ij
4 0 1 1	3	x ii j	b	1 · 9 · A	31 M	30 Ian.	16 Febr.	3 A	12 Ma ij
4 0 1 2	4	x x ii ij	A g	19 · 7 · A	18 A	19 Febr.	7 Mar.	22 A	31 Ma ij
4 0 1 3	5	v	f	8 · 16 · A	8 A	10 Febr.	27 Febr.	14 A	23 Ma ij
4 0 1 4	6	x v i	e	29 · 0 · M	28 M	26 Ian.	12 Febr.	30 M	8 Ma ij
4 0 1 5	7	x x v ii	d	16 · 22 · A	16 A	15 Febr.	4 Mart.	19 A	28 Ma ij
4 8	8	v	c b	5 · 7 · A	5 A	7	24 Febr.	10 A	19

A D .	Gol d. No.	E p a ct	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
0 1 6		ii j				Febr.			Ma ij
4 0 1 7	9	x i x	A	25 · 16 · M	25 M	22 Ian.	8 Febr.	26 M	4 Ma ij
4 0 1 8	10	* g		13 · 13 · A	13 A	11 Febr.	28 Febr.	15 A	24 Ma ij
4 0 1 9	11	x i	f	2 · 22 · A	2 A	3 Febr.	20 Febr.	7 A	16 Ma ij
4 0 2 0	12	x x ii	e d	22 · 7 · M	22 M	26 Ian.	12 Febr.	29 M	7 Ma ij
4 0 2 1	13	ii i	c	10 · 4 · A	10 A	7 Febr.	24 Febr.	11 A	20 Ma ij
4 0 2 2	14	x ii ii	b	30 · 13 · M	30 M	30 Ian.	16 Febr.	3 A	12 Ma ij
4 0 2 3	15	2 5	A	18 · 11 · A	17 A	19 Febr.	8 Mart.	23 A	1 Iun ij
4 0	16	vj	g f	6 · 19 · A	7 A	11 Febr.	28 Febr.	14 A	23 Ma

A D .	Gol d. No.	E p a ct	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
2									ij
4									
4	17	x	e	27 · 4 · M	27 M	26	12 Febr.	30 M	8
0		v				Ian.			Ma
2		ii							ij
5									
4	18	x	d	15 · 2 · A	15 A	15	4 Mart.	19 A	28
0		x				Febr.			Ma
2		v							ij
6		ii							
		i							
4	19	i	c	4 · 11 · A	4 A	7	24 Febr.	11 A	20
0		x				Febr.			Ma
2									ij
7									
4	1	x	b A	23 · 19 [?] ·	23 M	23	9 Febr.	26 M	4
0		x		M		Ian.			Ma
2		i							ij
8									
4	2	ij	g	11 · 17 · A	11 A	11	28 Febr.	15 A	24
0						Febr.			Ma
2									ij
9									
4	3	x	f	1 · 2 · A	31 M	3	20 Febr.	7 A	16
0		ii				Febr.			Ma
3		j							ij
0									
4	4	x	e	19 · 23 · A	18 A	16	5 Mart.	20 A	29
0		x				Febr.			Ma
3		ii							ij
1		ii							
4	5	v	d c	8 · 8 · A	8 A	8	25 Febr.	11 A	20
0						Febr.			Ma

A . . .	Gol d .	E p a .	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
3 2									ij
4 0 3 3	6	x v i	b	28 · 17 · M	28 M	30 Ian.	16 Febr.	3 A	12 Ma ij
4 0 3 4	7	x x v ii	A	16 · 15 · A	16 A	19 Febr.	8 Mart.	23 A	1 Iun ij
4 0 3 5	8	v ii i	g	5 · 23 · A	5 A	4 Febr.	21 Febr.	8 A	17 Ma ij
4 0 3 6	9	x i x	f e	25 · 8 · M	25 M	27 Ian.	13 Febr.	30 M	8 Ma ij
4 0 3 7	10	*	d	13 · 6 · A	13 A	15 Febr.	4 Mart.	19 A	28 Ma ij
4 0 3 8	11	x i	c	2 · 15 · A	2 A	31 Ian.	17 Febr.	4 A	13 Ma ij
4 0 3 9	12	x x ii	b	22 · 23 · M	22 M	23 Ian.	9 Febr.	27 M	5 Ma ij
4 0 4	13	ii j	A g	9 · 21 · A	10 A	12 Febr.	29 Febr.	15 A	24 Ma ii

A D .	Gol d. No.	E p a ct	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
0									
4 0 4 1	14	x ii ij	f	30 · 6 · M	30 M	27 Ian.	13 Febr.	31 M	9 Ma ij
4 0 4 2	15	2 5	e	18 · 3 · A	17 A	16 Febr.	5 Mart.	20 A	29 Ma ij
4 0 4 3	16	v i	d	7 · 12 · A	7 A	8 Febr.	25 Febr.	12 A	21 Ma ij
4 0 4 4	17	x v ij	c b	26 · 21 · M	27 M	31 Ian.	17 Febr.	3 A	12 Ma ij
4 0 4 5	18	x x v ii i	A	14 · 18 · A	15 A	12 Febr.	1 Mart.	16 A	25 Ma ij
4 0 4 6	19	i x	g	4 · 3 · A	4 A	4 Febr.	21 Febr.	8 A	17 Ma ij
4 0 4 7	1	x x i	f	24 · 12 · M	23 M	20 Ian.	6 Febr.	24 M	2 Ma ij
4 0 4	2	ij	e d	11 · 10 · A	11 A	9 Febr.	26 Febr.	12 A	21 Ma ij

A D .	Gol d. No.	E p a ct	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
8									
4 0 4 9	3	x ii j	c	31 · 18 · M	31 M	31 Ian.	17 Febr.	4 A	13 Ma ij
4 0 5 0	4	x x ii ii	b	19 · 16 · A	18 A	20 Febr.	9 Mart.	24 A	2 Iun ij
4 0 5 1	5	v	A	9 · 1 · A	8 A	5 Febr.	22 Febr.	9 A	18 Ma ij
4 0 5 2	6	x v i	g f	28 · 10 · M	28 M	28 Ian.	14 Febr.	31 M	9 Ma ij
4 0 5 3	7	x x v ii	e	16 · 7 · A	16 A	16 Febr.	5 Mart.	20 A	29 Ma ij
4 0 5 4	8	v ii i	d	5 · 16 · A	5 A	8 Febr.	25 Febr.	12 A	21 Ma ij
4 0 5 5	9	x i x	c	26 · 1 · M	25 M	24 Ian.	10 Febr.	28 M	6 Ma ij
4 0 5 6	10	*	b A	12 · 22 · A	13 A	13 Febr.	1 Mart.	16 A	25 Ma ij

A D .	Gol d. No.	E p a ct	Dom. lett. (Greg.)	Mean full moon D·H·mo	Moon 14 (Greg.)	Sept uage sima	Ash Wed. (Dies Cinerum)	Easte r (new)	Asc ens ion
4 0 5 7	11	x i	g	2 · 7 · A	2 A	4 Febr.	21 Febr.	8 A	17 Ma ij
4 0 5 8	12	x x ii	f	22 · 16 · M	22 M	20 Ian.	6 Febr.	24 M	2 Ma ij
4 0 5 9	13	ii i	e	10 · 13 · A	10 A	9 Febr.	26 Febr.	13 A	22 Ma ij
4 0 6 0	14	x ii ii	d c	29 · 22 · M	30 M	1 Febr.	18 Febr.	4 A	13 Ma ij
4 0 6 1	15	2 5	b	17 · 20 · A	17 A	20 Febr.	9 Mart.	24 A	2 Iun ij
4 0 6 2	16	v i	A	7 · 5 · A	7 A	5 Febr.	22 Febr.	9 A	18 Ma ij
4 0 6 3	17	x v ii	g	27 · 13 · M	27 M	28 Ian.	14 Febr.	1 A	10 Ma ij

Folio 467 — old-calendar leaf (MOBILIVM TEMPORARIA), A.D. 4008–4063

Running head: CAPVT XXII. / MOBILIVM TEMPORARIA.; folio 467. Same column plan as folio 465: the first feast columns are the Gregorian dates, the last four the old-calendar (Julian) values.

A			I						D
.			n						i
D	Pent	Corpus	d	Sun. p.	Adv	Dom. lett.	Moon 14	Easter	ff
.	ecost	Christi	.	Pent.	ent I	(vet.)	(vet.)	(vet.)	f
4	25	5 Iunij	6	26	30	f e	17 A	20 A	4
0	Maij				Nou				2
0					.				
8									
4	17	28 Maij	7	27	29	d	5 A	12 A	4
0	Maij				Nou				2
0					.				
9									
4	6	17 Iunij	8	24	28	c	25 M	28 M	7
0	Iunij				Nou				
1					.				
0									
4	22	2 Iunij	9	26	27	b	13 A	17 A	4
0	Maij				Nou				2
1					.				
1									
4	10	21 Iunij	1	24	2	A g	2 A	8 A	1
0	Iunij		0		Dec.				4
1									
2									
4	2	13 Iunij	1	25	1	f	22 M	24 M	7
0	Iunij		1		Dec.				
1									
3									
4	18	29 Maij	1	27	30	e	10 A	13 A	4
0	Maij		2		Nou				2
1					.				

A . D .	Pent ecost	Corpus Christi	I n d .	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
4									
4 0 1 5	7 Iunij	18 Iunij	1 3	24	29 Nou .	d	30 M	5 A	1 4
4 0 1 6	29 Maij	9 Iunij	1 4	25	27 Nou .	ç b	18 A	24 A	4 2
4 0 1 7	14 Maij	25 Maij	1 5	28	3 Dec.	A	7 A	9 A	4 2
4 0 1 8	3 Iunij	14 Iunij	1	25	2 Dec.	g	27 M	1 A	1 4
4 0 1 9	26 Maij	6 Iunij	2	26	1 Dec.	f	15 A	21 A	4 2
4 0 2 0	17 Maij	28 Maij	3	27	29 Nou .	e d	4 A	5 A	3 5
4 0 2 1	30 Maij	10 Iunij	4	25	28 Nou .	c	24 M	28 M	1 4
4 0 2 2	22 Maij	2 Iunij	5	26	27 Nou .	b	12 A	17 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
4 0 2 3	11 Iunij	22 Iunij	6	24	3 Dec.	A	1 A	2 A	7
4 0 2 4	2 Iunij	13 Iunij	7	25	1 Dec.	g f	21 M	24 M	7
4 0 2 5	18 Maij	29 Maij	8	27	30 Nou .	e	9 A	13 A	4 2
4 0 2 6	7 Iunij	18 Iunij	9	24	29 Nou .	d	29 M	5 A	1 4
4 0 2 7	30 Maij	10 Iunij	1 0	25	28 Nou .	c	17 A	18 A	3 5
4 0 2 8	14 Maij	25 Maij	1 1	28	3 Dec.	b A	5 A	9 A	4 2
4 0 2 9	3 Iunij	14 Iunij	1 2	25	2 Dec.	g	25 M	1 A	1 4
4 0 3 0	26 Maij	6 Iunii	1 3	26	1 Dec.	f	13 A	14 A	3 5
4	8	19 Iunij	1	24	30	e	2 A	6 A	1

A . D .	Pent ecost	Corpus Christi	I n d .	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
0 3 1	Iunij		4		Nou .				4
4 0 3 2	30 Maij	10 Iunij	1 5	25	28 Nou .	d c	22 M	28 M	1 4
4 0 3 3	22 Maij	2 Iunij	1	26	27 Nou .	b	10 A	17 A	4 2
4 0 3 4	11 Iunij	22 Iunij	2	24	3 Dec.	A	30 M	2 A	7
4 0 3 5	27 Maij	7 Iunij	3	26	2 Dec.	g	18 A	22 A	4 2
4 0 3 6	18 Maij	29 Maij	4	27	30 Nou .	f e	7 A	13 A	4 2
4 0 3 7	7 Iunij	18 Iunij	5	24	29 Nou .	d	27 M	29 M	7
4 0 3 8	23 Maij	3 Iunij	6	26	28 Nou .	c	15 A	18 A	4 2
4 0	15 Maij	26 Maij	7	27	27 Nou	b	4 A	10 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
3 9					.				
4 0 4 0	3 Iunij	14 Iunij	8	25	2 Dec.	A g	24 M	25 M	7
4 0 4 1	19 Maij	30 Maij	9	27	1 Dec.	f	12 A	14 A	4 2
4 0 4 2	8 Iunij	19 Iunij	1 0	24	30 Nou .	e	1 A	6 A	1 4
4 0 4 3	31 Maij	11 Iunij	1 1	25	29 Nou .	d	21 M	22 M	7
4 0 4 4	22 Maij	2 Iunij	1 2	26	27 Nou .	c b	9 A	10 A	3 5
4 0 4 5	4 Iunij	15 Iunij	1 3	25	3 Dec.	A	29 M	2 A	1 4
4 0 4 6	27 Maij	7 Iunij	1 4	26	2 Dec.	g	17 A	22 A	4 2
4 0 4	12 Maij	23 Maij	1 5	28	1 Deç.	f	5 A	7 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
7									
4 0 4 8	31 Maij	11 Iunij	1	25	29 Nou .	e d	25 M	29 M	1 4
4 0 4 9	23 Maij	3 Iunij	2	26	28 Nou .	c	13 A	18 A	4 2
4 0 5 0	12 Iunij	23 Iunij	3	23	27 Nou .	b	2 A	3 A	7
4 0 5 1	28 Maij	8 Iunij	4	26	3 Dec.	A	22 M	26 M	1 4
4 0 5 2	19 Maij	30 Maij	5	27	1 Dec.	g f	10 A	14 A	4 2
4 0 5 3	8 Iunij	19 Iunij	6	24	30 Nou .	e	30 M	6 A	1 4
4 0 5 4	31 Maij	11 Iunij	7	25	29 Nou .	d	18 A	19 A	3 5
4 0 5 5	16 Maij	27 Maij	8	27	28 Nou .	c	7 A	11 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sun. p. Pent.	Adv ent I	Dom. lett. (vet.)	Moon 14 (vet.)	Easter (vet.)	D i ff f
4 0 5 6	4 Iunij	15 Iunij	9	25	3 Dec.	b A	27 M	2 A	1 4
4 0 5 7	27 Maij	7 Iunij	1 0	26	2 Dec.	g	15 A	22 A	4 2
4 0 5 8	12 Maij	23 Maii	1 1	28	1 Dec.	f	4 A	7 A	4 2
4 0 5 9	1 Iunij	12 Iunij	1 2	25	30 Nou .	e	24 M	30 M	1 4
4 0 6 0	23 Maij	3 Iunij	1 3	26	28 Nou .	d c	12 A	18 A	4 2
4 0 6 1	12 Iunij	23 Iunij	1 4	23	27 Nou .	b	1 A	3 A	7
4 0 6 2	28 Maij	8 Iunij	1 5	26	3 Dec.	A	21 M	26 M	1 4
4 0 6 3	20 Maij	31 Maij	1	27	2 Dec.	g	9 A	15 A	4 2

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

The great table of the movable feasts for the years 1600–5000 continues. Each opening pairs a new-calendar (Gregorian) leaf with the old-calendar (veteris) continuation. Here the new-calendar leaf for A.D. 4064–4119 (folio 468) faces its Caput XXII continuation (folio 469), followed by the next new-calendar leaf for A.D. 4120–4175 (folio 470).

Column key (new-calendar leaves, folios 468 and 470): **A.D.** = year of the Lord · **GN** = golden number (*Aureus Numerus*) · **Epact** (*Epactæ*) · **Dom.** = Dominical letter(s) of the Gregorian calendar (two in leap years) · **FM d./h./mo.** = mean full moon of the Gregorian calendar — day, hour, month letter (M = *Martius*, A = *Aprilis*) · **L.14** = the moon's 14th day (*Luna xiv*) of the Gregorian calendar, with its month letter · **Septuag.** = Septuagesima · **Dies Cin.** = Ash Wednesday (*Dies Cinerum*) · **Pascha** = Easter of the new calendar, with month letter · **Ascensio** = Ascension of the Lord.

Folio 468 — *Tabula Festorum* (new calendar), A.D. 4064–4119

A	E	D	M	M	F	L	L.1		P			
.	p	o			M	.	4		as			
D	ac	m	d	h	m	1	mo		Dies	h		
.	t	.	.	.	o.	4	.	Septuag.	Cin.	a	P. mo.	Ascensio
4 0 6 4	x x vi ii	f e	1 4	1 1	A	1 5	A	17 Febr.	5 Mar t.	2 0	A	29 Maij
4 0 6 5	ix	d	3	2 0	A	4	A	1 Febr.	18 Feb r.	5	A	14 Maij
4 0 6 6	x xj	c	2 4	5	M	2 3	M	24 Ian.	10 Feb r.	2 8	M	6 Maij
4 0	ij	b	1	2	A	1	A	13 Febr.	2 Mar	1	A	26 Maij

A	E	D	M	F	L	L.1			P			
.	p	o		M	.	4			as			
D	ac	m	d	h	m	1	mo		Dies	h		
.	t	.	.	.	o.	4	.	Septuag.	Cin.	a	P. mo.	Ascensio
6			2			1			t.	7		
7												
4	xi	A	3	1	M	3	M	29 Ian.	15	1	A	10 Maij
0	ij		1	1		1			Feb			
6		g							r.			
8												
4	x	f	1	8	A	1	A	17 Febr.	6	2	A	30 Maij
0	xi		9			8			Mar	1		
6	ij								.			
9												
4	v	e	8	1	A	8	A	9 Febr.	26	1	A	22 Maij
0				7					Feb	3		
7									r.			
0												
4	x	d	2	2	M	2	M	25 Ian.	11	2	M	7 Maij
0	vi		9			8			Feb	9		
7									r.			
1												
4	x	c	1	0	A	1	A	14 Febr.	2	1	A	26 Maij
0	x		6			6			Mar	7		
7	vi	b							t.			
2	i											
4	vi	A	5	8	A	5	A	5 Febr.	22	9	A	18 Maij
0	ij								Feb			
7									r.			
3												
4	xi	g	2	1	M	2	M	28 Ian.	14	1	A	10 Maij
0	x		5	7		5			Feb			
7									r.			
4												
4	*	f	1	1	A	1	A	10 Febr.	27	1	A	23 Maij
0			3	5		3			Feb	4		

A	E	F		F	M	L	L.1	Septuag.	P			
		D	M						as	c		
D	ac	m	d	h	m	1	mo		Dies	h	P. mo.	Ascensio
7									r.			
5												
4	xi	e	2	0	A	2	A	2 Febr.	19	5	A	14 Maij
0									Feb			
7		d							r.			
6												
4	x	c	2	8	M	2	M	24 Ian.	10	2	M	6 Maij
0	xi		2			2			Feb	8		
7	i								r.			
7												
4	iii	b	1	6	A	1	A	13 Febr.	2	1	A	26 Maij
0			0			0			Mar	7		
7									t.			
8												
4	xi	A	3	5	M	3	M	29 Ian.	15	2	A	11 Maij
0	iii		0			0			Feb			
7									r.			
9												
4	2	g	1	1	A	1	A	18 Febr.	6	2	A	30 Maij
0	5		7	2		7			Mar	1		
8		f							.			
0												
4	vj	e	6	2	A	7	A	9 Febr.	26	1	A	22 Maij
0				1					Feb	3		
8									r.			
1												
4	x	d	2	6	M	2	M	25 Ian.	11	2	M	7 Maij
0	vi		7			7			Feb	9		
8	i								r.			
2												
4	x	c	1	3	A	1	A	14 Febr.	3	1	A	27 Maij
0	x		5			5			Mar	8		

F F								P				
A	E	D	M	M	F	L	L.1	as				
.	p	o			M	.	4	c				
D	ac	m	d	h	m	1	mo	h				
.	t	.	.	.	o.	4	.	Dies Cin.				
Septuag.								a	P. mo.	Ascensio		
8	vi								t.			
3	ii											
4	ix	b	3	1	A	4	A	6 Febr.	23	9	A	18 Maij
0				2					Feb			
8		A							r.			
4	x	g	2	2	M	2	M	21 Ian.	7	2	M	3 Maij
0	xi		3	1		3			Feb	5		
8									r.			
5												
4	ij	f	1	1	A	1	A	10 Febr.	27	1	A	23 Maij
0			1	9		1			Feb	4		
8									r.			
6												
4	xi	e	1	3	A	3	M	2 Febr.	19	6	A	15 Maij
0	ij					1			Feb			
8									r.			
7												
4	x	d	1	1	A	1	A	22 Febr.	10	2	A	3 Iunij
0	xi		9			8			Mar	5		
8	iii	c							.			
8												
4	v	b	8	1	A	8	A	6 Febr.	23	1	A	19 Maij
0				0					Feb	0		
8									r.			
9												
4	x	A	2	1	M	2	M	29 Ian.	15	2	A	11 Maij
0	vi		8	9		8			Feb			
9									r.			
0												
4	x	g	1	1	A	1	A	18 Febr.	7	2	A	31 Maij
0	x		6	6		6			Mar	2		

A	E	D	M	F	L	L.1			P			
.	p	o		M	.	4			as			
D	ac	m	d	h	m	1	mo		Dies	h		
.	t	.	.	.	o.	4	.	Septuag.	Cin.	a	P. mo.	Ascensio
9	vi								.			
1	i											
4	vi	f	5	1	A	5	A	3 Febr.	20	6	A	15 Maij
0	ij	e							Feb			
9									r.			
2												
4	xi	d	2	1	M	2	M	25 Ian.	11	2	M	7 Maij
0	x		5	0		5			Feb	9		
9									r.			
3												
4	*	c	1	7	A	1	A	14 Febr.	3	1	A	27 Maii
0			3			3			Mar	8		
9									t.			
4												
4	xi	b	2	1	A	2	A	30 Ian.	16	3	A	12 Maij
0				6					Feb			
9									r.			
5												
4	x	A	2	1	M	2	M	22 Ian.	8	2	M	3 Maij
0	xi		2			2			Feb	5		
9	i	g							r.			
6												
4	iiij	f	9	2	A	1	A	10 Febr.	27	1	A	23 Maij
0				2		0			Feb	4		
9									r.			
7												
4	xi	e	3	7	M	3	M	2 Febr.	19	6	A	15 Maij
0	iiij		0			0			Feb			
9									r.			
8												
4	2	d	1	5	A	1	A	15 Febr.	4	1	A	28 Maij
0	5		8			7			Mar	9		

F F P as c h a P. mo. Ascensio												
A	E	D	M	M	F	L	L.1		Dies			
.	p	o			M	.	4		Cin.			
D	ac	m	d	h	m	1	mo	Septuag.				
.	t	.	.	.	o.	4	.					
9									t.			
9												
4	v	c	8	1	A	8	A	7 Febr.	24	1	A	20 Maij
1				4					Feb	1		
0									r.			
0												
4	x	b	2	2	M	2	M	30 Ian.	16	3	A	12 Maij
1	vi		7	2		8			Feb			
0									r.			
1												
4	x	A	1	2	A	1	A	19 Febr.	8	2	A	1 Iunij
1	x		5	0		6			Mar	3		
0	vi								.			
2	i											
4	vi	g	5	5	A	5	A	4 Febr.	21	8	A	17 Maij
1	ii								Feb			
0									r.			
3												
4	x	f	2	1	M	2	M	27 Ian.	13	3	M	8 Iunij [recte:
1	x	e	4	4		4			Feb	0		8 Maij]
0									r.			
4												
4	j	d	1	1	A	1	A	15 Febr.	4	1	A	28 Maij
1			2	1		2			Mar	9		
0									.			
5												
4	xi	c	1	2	A	1	A	31 Ian.	17	4	A	13 Maij
1	i			0					Feb			
0									r.			
6												
4	x	b	2	5	M	2	M	23 Ian.	9	2	M	5 Maij
1	xi		2			1			Feb	7		

A	E	F		F	M	L	L.1		P	as	c	h	Dies	Cin.	a	P. mo.	Ascensio
		D	M														
.	p	o			M	.	4										
D	ac	m	d	h	m	1	mo										
.	t	.	.	.	o.	4	.	Septuag.									
0	ii												r.				
7																	
4	iii	A	9	2	A	9	A	12 Febr.					29	1	A		24 Maij
1	i												Feb	5			
0		g											r.				
8																	
4	x	f	2	1	M	2	M	27 Ian.					13	3	M		9 Maij
1	v		9	1		9							Feb	1			
0													r.				
9																	
4	x	e	1	9	A	1	A	16 Febr.					5	2	A		29 Maij
1	x		7			7							Mar	0			
1	vi												.				
0																	
4	vi	d	6	1	A	6	A	8 Febr.					25	1	A		21 Maij
1	j			7									Feb	2			
1													r.				
1																	
4	x	c	2	2	M	2	M	24 Ian.					10	2	M		5 Maij
1	vi		6			6							Feb	7			
1	ij	b											r.				
2																	
4	x	A	1	0	A	1	A	12 Febr.					1	1	A		25 Maij
1	xi		4			4							Mar	6			
1	x												.				
3																	
4	x	g	3	9	A	3	A	4 Febr.					21	8	A		17 Maij
1													Feb				
1													r.				
4																	
4	x	f	2	1	M	2	M	20 Febr.					6	2	M		2 Maij
1	xi		3	7		3		[recte: 20 Ian.]					Feb.	4			

F F									P			
A	E	D	M	M	F	L	L.1		as			
.	p	o			M	.	4		c			
D	ac	m	d	h	m	1	mo		h			
.	t	.	.	.	o.	4	.	Septuag.	Dies	Cin.	a	P. mo. Ascensio
1												
5												
4	ij	e	1	1	A	1	A	9 Febr.	26	1	A	21 Maij
1			0	5		1			Feb	2		
1		d							r.			
6												
4	xi	c	3	0	M	3	M	31 Ian.	17	4	A	13 Maij
1	ij		1			1			Feb			
1									r.			
7												
4	x	b	1	2	A	1	A	20 Febr.	9	2	M	2 Maij [recte:
1	xi		8	1		8			Mar	4	[recte:	2 Iunij]
1	iii								.		A]	
8												
4	v	A	8	6	A	8	A	5 Febr.	22	9	A	18 Maij
1									Feb			
1									r.			
9												

Folio 469 — *Caput XXII, Mobilium Temporaria* (continuation columns), A.D. 4064–4119

Column key: **Pentecoste** = Pentecost (day + month, *Maij/Iunij*) · **Corpus Domini** = Corpus Christi (day + month) · **Ind.** = Indiction (*Indictio*) · **Dom. p. Pent.** = Sundays after Pentecost (*Dominicæ post Pentecosten*) · **Dom. I Aduentus** = first Sunday of Advent (day + month, *Nou./Dec.*) · **Dom. vet.** = Dominical letter(s) of the old calendar (*Literæ Dominicales Calendarii veteris*) · **L.14 vet.** = the moon's 14th day of the old calendar (day + month letter) · **Pascha vet.** = Easter of the old calendar (day + month letter) · **Diff** = number of days by which the new-calendar Easter differs from the old-calendar Easter (*Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt*).

A.D.	Pentecoste	Corpus Domini	In d .	Dom. p. Pent.	Dom. I Aduentus	Dom . vet.	L.14 vet.	m o Pasch . a vet.	D mi o ff . f
4064	8 Iunij	19 Iunij	2	24	30 Nou.	f e	29	M30	M7
4065	24 Maij	4 Iunij	3	26	29 Nou.	d	17	A 19	A 4 2
4066	16 Maij	27 Maij	4	27	28 Nou.	c	5	A 11	A 4 2
4067	5 Iunij	16 Iunij	5	24	27 Nou.	b	25	M27	M7
4068	20 Maij	31 Maij	6	27	2 Dec.	A g	13	A 15	A 4 2
4069	9 Iunij	20 Iunij	7	24	1 Dec.	f	2	A 7	A 1 4
4070	1 Iunij	12 Iunij	8	25	30 Nou.	e	22	M23	M7
4071	17 Maij	28 Maij	9	27	29 Nou.	d	10	A 12	A 4 2
4072	5 Iunij	16 Iunij	1 0	24	27 Nou.	ç b	30	M3	A 1 4
4073	28 Maij	8 Iunij	1 1	26	3 Dec.	A	18	A 22	A 4 2
4074	20 Maij	31 Maij	1 2	27	2 Dec.	g	7	A 8	A 3 5
4075	2 Iunij	13 Iunij	1 3	25	1 Dec.	f	27	M31	M1 4
4076	24 Maij	4 Iunij	1 4	26	29 Nou.	e d	15	A 19	A 4 2
4077	16 Maij	27 Maij	1 5	27	28 Nou.	c	4	A 11	A 4 2
4078	5 Iunij	16 Iunij	1	24	27 Nou.	b	24	M27	M7
4079	21	1 Iunij	2	27	3 Dec.	A	12	A 16	A 4

A.D.	Pentecoste	Corpus Domini	In d .	Dom. p. Pent.	Dom. I Aduentus	Dom . vet.	L.14 vet.	m o Pasch . a vet.	D mi o ff . f
	Maij								2
4080	9 Iunij	20 Iunij	3	24	1 Dec.	g f	1	A 7	A 14
4081	1 Iunij	12 Iunij	4	25	30 Nou.	e	21	M23	M7
4082	17 Maij	28 Maij	5	27	29 Nou.	d	9	A 12	A 42
4083	6 Iunij	17 Iunij	6	24	28 Nou.	c	29	M4	A 14
4084	28 Maij	8 Iunij	7	26	3 Dec.	b A	17	A 23	A 42
4085	13 Maij	24 Maii	8	28	2 Dec.	g	5	A 8	A 42
4086	2 Iunij	13 Iunij	9	25	1 Dec.	f	25	M31	M14
4087	25 Maij	5 Iunij	10	26	30 Nou.	e	13	A 20	A 42
4088	13 Iunij	24 Iunij	11	23	28 Nou.	d c	2	A 4	A 7
4089	29 Maij	9 Iunij	12	25	27 Nou.	b	22	M27	M14
4090	21 Maij	1 Iunij	13	27	3 Dec.	A	10	A 16	A 42
4091	10 Iunij	21 Iunij	14	24	2 Dec.	g	30	M1	A 7
4092	25 Maij	5 Iunij	15	26	30 Nou.	f e	18	A 20	A 42
4093	17 Maij	28 Maij	1	27	29 Nou.	d	7	A 12	A 42
4094	6 Iunij	17 Iunij	2	24	28 Nou.	c	27	M28	M7

A.D.	Pentecoste	Corpus Domini	In d .	Dom. p. Pent.	Dom. I Aduentus	Dom . vet.	L.14 vet.	m o Pasch . a vet.	D mi o ff . f
4095	22 Maij	2 Iunij	3	26	27 Nou.	b	15	A 17	A 42
4096	13 Maij	24 Maij	4	28	2 Dec.	A g	4	A 8	A 42
4097	2 Iunij	13 Iunij	5	25	1 Dec.	f	24	M31	M14
4098	25 Maij	5 Iunij	6	26	30 Nou.	e	12	A 13	A 35
4099	7 Iunij	18 Iunij	7	24	29 Nou.	d	1	A 5	A 14
4100	30 Maij	10 Iunij	8	25	28 Nou.	c b	21	M27	M14
4101	22 Maij	2 Iunij	9	26	27 Nou.	A	9	A 16	A 42
4102	11 Iunij	22 Iunij	10	24	3 Dec.	g	29	M1	A 7
4103	27 Maij	7 Iunij	11	26	2 Dec.	f	17	A 21	A 42
4104	18 Maij	29 Maij	12	27	30 Nou.	e d	5	A 12	A 42
4105	7 Iunij	18 Iunij	13	24	29 Nou.	c	25	M28	M7
4206 [recte 4106]	23 Maij	3 Iunij	14	26	28 Nou.	b	13	A 17	A 42
4107	15 Maij	26 Maij	15	27	27 Nou.	A	2	A 9	A 42
4108	3 Iunij	14 Iunij	1	25	2 Dec.	g f	22	M24	M7
4109	19 Maij	30 Maij	2	27	1 Dec.	e	10	A 13	A 42
4110	8	19 Iunij	3	24	30 Nou.	d	30	M5	A 1

A.D.	Pent ecoste	Corpus Domini	I n d om. p. Pent.	Dom. I Aduentu s	Dom .vet.	L.14 vet.	m o Pasch . a vet.	D mi o ff . f
	Iunij							4
4111	31 Maij	11 Iunij	4 25	29 Nou.	c	18	A 25	A 4 2
4112	15 Maij	26 Maij	5 27	27 Nou.	b A	7	A 9	A 4 2
4113	4 Iunij	15 Iunij	6 25	3 Dec.	g	27	M1	A 1 4
4114	27 Maij	7 Iunii	7 26	2 Dec.	f	15	A 21	A 4 2
4115	12 Maij	23 Maij	8 28	1 Dec.	e	4	A 6	A 4 2
4116	31 Maij	11 Iunij	9 25	29 Nou.	d c	24	M28	M1 4
4117	23 Maij	3 Iunij	1 26 0	28 Nou.	b	12	A 17	A 4 2
4118	12 Iunij	23 Iunij	1 23 1	27 Nou.	A	1	A 2	A 7
4119	28 Maij	8 Iunij	1 26 2	3 Dec.	g	21	M25	M1 4

Folio 470 — *Tabula Festorum* (new calendar), A.D. 4120–4175

A . D . .	Ep ac t	D o . .	F M d.	L M h.	M M o.	. 1 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio
4 1 2 0	xv i	g f	2 7	1 5	M	2 8	M	28 Ian.	14 Febr.	31	M	9 Maij
4 1 2	xx vii	e	1 5	1 3	A	1 6	A	16 Feb r.	5 Mart .	20	A	29 Maij

A . D . 1	Ep ac t	D o m	F M d.	F M h.	F M o.	L 1 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio
1												
4 1 2 2	vii i	d	4	2 1	A	5	A	8 Feb r.	25 Febr.	12	A	21 Maij
4 1 2 3	xx	c	2 5	6	M	2 4	M	24 Ian.	10 Febr.	28	M	6 Maij
4 1 2 4	j	b A	1 2	4	A	1 2	A	13 Feb r.	1 Mar.	16	A	25 Maij
4 1 2 5	xij	g	1 3	1	A	1	A	4 Feb r.	21 Febr.	8	A	17 Maij
4 1 2 6	xx iij	f	2 1	2 1	M	2 1	M	20 Ian.	6 Febr.	24	M	2 Maij
4 1 2 7	iiij	e	9 9	1	A	9	A	9 Feb r.	26 Febr.	13	A	22 Maij
4 1 2 8	xv	d c	2 9	4	M	2 9	M	1 Feb r.	18 Febr.	4	A	13 Maij
4 1 2 9	xx vi	b	1 7	1	A	1 7	A	20 Feb r.	9 Mart .	24	A	2 Iunij

A . D . .	Ep ac t	D o m . d.	F M M h.	F M M o.	L . 1 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio	
4 1 3 0	vij	A	6	1 0	A	6	A	5 Feb r.	22 Febr.	9	A	18 Maij
4 1 3 1	xv iii	g	2 6	1 9	M	2 6	M	28 Ian.	14 Febr.	1	A	10 Maij
4 1 3 2	xx ix	f e	1 3	1 6	A	1 4	A	17 Feb r.	5 Mar.	20	A	29 Maij
4 1 3 3	x	d	3	1	A	3	A	1 Feb r.	18 Febr.	5	A	14 Maij
4 1 3 4	xx i	c	2 3	1 0	A	2 3	M	24 Ian.	10 Febr.	28	M	6 Maij
4 1 3 5	ij	b	1 1	8	A	1 1	A	13 Feb r.	2 Mart .	17	A	26 Maij
4 1 3 6	xii i	A g	3 0	1 6	M	3 1	M	29 Ian.	15 Febr.	1	A	10 Maij
4 1 3 7	xx iiii	f	1 8	1 4	A	1 8	A	17 Feb r.	6 Mart .	21	A	30 Maij
4	v	e	7	2	A	8	A	9	26	13	A	22 Maij

A . D .	Ep ac t	D o . d.	F M d.	F M h.	F M o.	L . 1 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio
1 3 8				3				Feb r.	Febr.			
4 1 3 9	xv i	d 8	2 8		M	2 8	M	25 Ian.	11 Febr.	29	M	7 Maij
4 1 4 0	xx vii	c b	1 5	5	A	1 6	A	14 Feb r.	2 Mar.	17	A	26 Maij
4 1 4 1	vii i	A	4 4	1 4	A	5	A	5 Feb r.	22 Febr.	9	A	18 Maij
4 1 4 2	xx	g	2 4	2 3	M	2 4	M	21 Ian.	7 Febr.	25	M	3 Maij
4 1 4 3	j	f	1 2	2 0	A	1 2	A	10 Feb r.	27 Feb.	14	A	23 Maij
4 1 4 4	xii	e d	1 5	5	A	1	A	2 Feb r.	19 Febr.	5	A	14 Maij
4 1 4 5	xx iii	c	2 1	1 4	A	2 1	M	24 Ian.	10 Febr.	28	M	6 Maij
4 1	iiii	b	9 1	1 1	A	9	A	6 Feb	23 Febr.	10	A	19 Maij

A . D . .	Ep ac t	D o . d.	F M M	F M h.	F M o.	L . 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio
4 6								r.				
4 1 4 7	xv	A	2 9	2 0	M	2 9	M	29 Ian.	15 Febr.	2	A	11 Maij
4 1 4 8	xx vi	g f	1 6	1 8	A	1 7	A	18 Feb r.	6 Mar.	21	A	30 Maij
4 1 4 9	vij	e	6	3	A	6	A	9 Feb r.	26 Febr.	13	A	22 Maii
4 1 5 0	xv iii	d	2 6	1 1	M	2 6	M	25 Ian.	11 Febr.	29	M	7 Maij
4 1 5 1	xx ix	c	1 4	9	A	1 4	A	14 Feb r.	3 Mar.	18	A	27 Maij
4 1 5 2	x	b A	2 8	1 8	A	3	A	6 Feb r.	23 Febr.	9	A	18 Maij
4 1 5 3	xx i	g	2 3	3	M	2 3	M	21 Ian.	7 Febr.	25	M	3 Maij
4 1 5	ij	f	1 1	0	A	1 1	A	10 Feb r.	27 Febr.	14	A	23 Maij

A . D .	Ep ac t	D o m .	F M d.	F M h.	F M o.	L 1 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio
4												
4 1 5 5	xii i	e 1	3 1	9	M	3 1	M	2 Feb r.	19 Febr.	6	A	15 Maij
4 1 5 6	xx iiii	d c	1 8	6	A	1 8	A	22 Feb r.	10 Mar.	25	A	3 Iunij
4 1 5 7	v	b	7 5	1	A	8	A	6 Feb r.	23 Febr.	10	A	19 Maij
4 1 5 8	xv i	A	2 8	0	M	2 8	M	29 Ian.	15 Febr.	2	A	11 Maij
4 1 5 9	xx vii	g	1 5	2 2	A	1 6	A	18 Feb r.	7 Mart .	22	A	31 Maij
4 1 6 0	vii i	f e	4	6	A	5	A	3 Feb r.	20 Febr.	6	A	15 Maij
4 1 6 1	xx	d	2 4	1 5	M	2 4	M	25 Ian.	11 Febr.	29	M	7 Maij
4 1 6 2	j	c	1 2	1 3	A	1 2	A	14 Feb r.	3 Mar.	18	A	27 Maij

A . D .	Ep ac t	D o m .	F M d.	F M h.	F M o.	L . 1 4	L.14 mo.	Sept uag.	Dies Cin.	Pa sc ha	P. mo.	Ascensio
4 1 6 3	xii	b	1	2 2	A	1	A	30 Ian.	16 Febr.	3	A	12 Maij
4 1 6 4	xx iii	A g	2 1	6	M	2 1	M	22 Ian.	8 Febr.	25	M	3 Maij
4 1 6 5	iiij	f	9	4	A	9	A	10 Feb r.	27 Febr.	14	A	23 Maij
4 1 6 6	xv	e	2 9	1 3	M	2 9	M	26 Ian.	12 Febr.	30	M	8 Maij
4 1 6 7	xx vi	d	1 7	1 0	A	1 7	A	15 Feb r.	4 Mart .	19	A	28 Maij
4 1 6 8	vij	c b	5 b	1 9	A	6	A	7 Feb r.	24 Febr.	10	A	19 Maij
4 1 6 9	xv iii	A	2 6	4	M	2 6	M	29 Ian.	15 Febr.	2	A	11 Maij
4 1 7 0	xx ix	g	1 4	1	A	1 4	A	11 Feb r.	28 Febr.	15	A	24 Maij
4	x	f	3	1	A	3	A	3	20	7	A	16 Maij

A		D		F	L							
.	Ep	o	F	F	M	.				Pa		
D	ac	m	M	M	m	1	L.14	Sept	Dies	sc		
.	t	.	d.	h.	o.	4	mo.	uag.	Cin.	ha	P. mo.	Ascensio
1				0				Feb	Febr.			
7								r.				
1												
4	xx	e	2	1	M	2	M	26	12	29	M	7 Maij
1	i	d	2	9		3		Ian.	Febr.			
7												
2												
4	ij	c	1	1	A	1	A	14	3	18	A	27 Maij
1			0	7		1		Feb	Mart			
7								r.	.			
3												
4	xii	b	3	1	M	3	M	30	16	3	A	12 Maij
1	i		1			1		Ian.	Febr.			
7												
4												
4	xx	A	1	2	A	1	A	19	8	23	M	1 Maij [recte: 1
1	iiii		8	3		8		Feb	Mart		[recte: Iunij]	
7								r.	.		A]	
5												

Caput XXII — Table of the Movable Feasts (continued)

Tabula Festorum Mobilium Temporaria (1600–5000), continued. The table is set as facing leaves: a **new-calendar (Gregorian)** leaf headed *Tabula Festorum / Calend. Greg.*, paired with an **old-calendar (Julian, "veteris")** leaf headed *Mobilium Temporaria*. This opening carries the old-calendar leaf completing the years **4120–4175** (its Gregorian partner was on the preceding leaf), then the full Gregorian + Julian pair for the years **4176–4231**.

Reading conventions in the moon and feast columns: the month-letter **A** = *Aprilis* (April), **M** = *Martius* (March). In the mean-full-moon column the three sub-values are **day · hour · month** (the hour is the smallest type on the page). Golden

number, epact, and month spellings are transcribed exactly as printed (Roman vs. Arabic numerals, i-/j-terminal sorts, Feb./Febr., Iunij/Iunii, the epact-30 asterisk *); values are read cell-by-cell off the leaf.

Old-calendar leaf (*Mobilium Temporaria*), A.D. 4120–4175 — folio 471

Columns: A.D. | Pentecost [*Pentecoste*] | Corpus Christi [*Corpus Domini*] | Indiction | Sundays after Pentecost [*Düicæ post Pentecosten*] | First Sunday of Advent [*Dominica prima Aduentus*] | Dominical letter(s), old cal. | Luna 14, old cal. | Easter, old cal. [*Pascha*] | Difference [days by which new-cal. Easter differs from old-cal. Easter]

A

D .	Pentecost	Corpus Christi	Indict.	Sund. p. Pent.	Advent I	Dom. letter	Luna 14	Easter (vet.)	Difference
4120	19 Maij	30 Maij	13	27	1 Dec.	f e	9 A	13 A	42
4121									
4122									
4123									
4124	8 Iunij	19 Iunij	14	24	30 Nou.	d	29 M	5 A	14
4125									
4126									
4127									
4128	31 Maij	11 Iunij	15	25	29 Nou.	c	17 A	18 A	35
4129									
4130									
4131	16 Maij	27 Maij	1	27	28 Nou.	b	5 A	10 A	42
4132									
4133									
4134	4 Iunij	15 Iunij	2	25	3 Dec.	A g	25 M	1 A	14
4135									
4136									
4137	27 Maij	7 Iunij	3	26	2	f	13	14 A	35

A										
.										
D	Pentec	Corpus	Indi	Sund. p.	Adv	Dom.	Lun	Easter	Di	
.	ost	Christi	ct.	Pent.	ent I	letter	a 14	(vet.)	ff.	
1					Dec.		A			
2										
5										
4	12 Iunij	23 Maij	4	28	1	e	2 A	6 A	42	
1					Dec.					
2										
6										
4	1 Iunij	12 Iunij	5	25	30	d	22	29 M	14	
1					Nou.		M			
2										
7										
4	23 Maij	3 Iunij	6	26	28	c b	10	17 A	42	
1					Nou.		A			
2										
8										
4	12 Iunij	23 Iunij	7	23	27	A	30	2 A	7	
1					Nou.		M			
2										
9										
4	28 Maij	8 Iunij	8	26	3	g	18	22 A	42	
1					Dec.		A			
3										
0										
4	20 Maij	31 Maij	9	27	2	f	7 A	14 A	42	
1					Dec.					
3										
1										
4	8 Iunij	19 Iunij	10	24	30	e d	27	29 M	7	
1					Nou.		M			
3										
2										
4	24 Maij	4 Iunij	11	26	29	c	15	18 A	42	
1					Nou.		A			

A	D .	Pentecost	Corpus Christi	Indict.	Sund. p. Pent.	Adv ent I	Dom. letter	Lun a 14	Easter (vet.)	Di ff.
3 3										
4 1 3 4	16 Maij	27 Maij	12	27	28 Nou.	b		4 A	10 A	42
4 1 3 5	5 Iunij	16 Iunij	13	24	27 Nou.	A		24 M	26 M	7
4 1 3 6	20 Maij	31 Maij	14	27	2 Dec.	g f		12 A	14 A	42
4 1 3 7	9 Iunij	20 Iunij	15	24	1 Dec.	e		1 A	6 A	14
4 1 3 8	1 Iunij	12 Iunij	1	25	30 Nou.	d		21 M	22 M	7
4 1 3 9	17 Maij	28 Maij	2	27	29 Nou.	c		9 A	11 A	42
4 1 4 0	5 Iunij	16 Iunij	3	24	27 Nou.	b A		29 M	2 A	14
4 1 4	28 Maij	8 Iunij	4	26	3 Dec.	g		17 A	22 A	42

A D	Pentecost	Corpus Christi	Indict.	Sund. Pent.	Adv ent I	Dom. letter	Lun a 14	Easter (vet.)	Di ff.
1									
4142	13 Maij	24 Maij	5	28	2 Dec.	f	5 A	7 A	42
42									
4143	2 Iunj	13 Iunj	6	25	1 Dec.	e	25 M	30 M	14
44									
4144	24 Maij	4 Iunj	7	26	29 Nou.	d c	13 A	18 A	42
45									
4145	16 Maij	27 Maij	8	27	28 Nou.	b	2 A	3 A	35
46									
4146	29 Maij	9 Iunj	9	25	27 Nou.	A	22 M	26 M	14
47									
4147	21 Maij	1 Iunj	10	27	3 Dec.	g	10 A	15 A	42
48									
4148	9 Iunj	20 Iunj	11	24	1 Dec.	f e	30 M	6 A	14
49									
4149	1 Iunj	12 Iunj	12	25	30 Nou.	d	18 A	19 A	35

A

D . .	Pentecost	Corpus Christi	Indict.	Sund. p. Pent.	Advent I	Dom. letter	Luna 14	Easter (vet.)	Difference
4150	17 Maij	28 Maij	13	27	29 Nou.	c	7 A	11 A	42
4151	6 Iunii	17 Iunij	14	24	28 Nou.	b	27 M	3 A	14
4152	28 Maij	8 Iunij	15	26	3 Dec.	A g	15 A	22 A	42
4153	13 Maij	24 Maij	1	28	2 Dec.	f	4 A	7 A	42
4154	2 Iunij	13 Iunij	2	25	1 Dec.	e	24 M	30 M	14
4155	25 Maij	5 Iunij	3	26	30 Nou.	d	12 A	19 A	42
4156	13 Iunij	24 Iunij	4	23	28 Nou.	c b	1 A	3 A	7
4157	29 Maij	9 Iunij	5	25	27 Nou.	A	21 M	26 M	14
4	21 Maij	1 Iunij	6	27	3	g	9 A	15 A	42

A										
.										
D	Pentec	Corpus	Indi	Sund. p.	Adv	Dom.	Lun	Easter	Di	
.	ost	Christi	ct.	Pent.	ent I	letter	a 14	(vet.)	ff.	
1					Dec.					
5										
8										
4	10 Iunij	21 Iunij	7	24	2	f	29	31 M	7	
1					Dec.		M			
5										
9										
4	25 Maij	5 Iunij	8	26	30	e d	17	19 A	42	
1					Nou.		A			
6										
0										
4	17 Maij	28 Maij	9	27	29	c	5 A	11 A	42	
1					Nou.					
6										
1										
4	6 Iunij	17 Iunij	10	24	28	b	25	27 M	7	
1					Nou.		M			
6										
2										
4	22 Maij	2 Iunij	11	26	27	A	13	16 A	42	
1					Nou.		A			
6										
3										
4	13 Maij	24 Maij	12	28	2	g f	2 A	7 A	42	
1					Dec.					
6										
4										
4	2 Iunij	13 Iunij	13	25	1	e	22	23 M	7	
1					Dec.		M			
6										
5										
4	18 Maij	29 Maij	14	27	30	d	10	12 A	42	
1					Nou.		A			

A D .	Pentec ost	Corpus Christi	Indi ct.	Sund. p. Pent.	Adv ent I	Dom. letter	Lun a 14	Easter (vet.)	Di ff.
6 6									
4 1 6 7	7 Iunij [?]	18 Iunij	15	24	29 Nou.	c	30 M	4 A	14
4 1 6 8	29 Maij	9 Iunij	1	25	27 Nou.	b A	18 A	23 A	42
4 1 6 9	21 Maij	1 Iunij	2	27	3 Dec.	g	7 A	8 A	35
4 1 7 0	3 Iunij	14 Iunij	3	25	2 Dec.	f	27 M	31 M	14
4 1 7 1	26 Maij	6 Iunij	4	26	1 Dec.	e	15 A	20 A	42
4 1 7 2	17 Maij	28 Maij	5	27	29 Nou.	d c	4 A	11 A	42
4 1 7 3	6 Iunij	17 Iunij	6	24	28 Nou.	b	24 M	27 M	7
4 1 7	22 Maij	2 Iunij	7	26	27 Nou.	A	12 A	16 A	42

•

D .	Pentecost	Corpus Christi	Indict.	Sund. p. Pent.	Adv. ent I	Dom. letter	Luna 14	Easter (vet.)	Diff.
4									
4 1 7 5	11 Iunij	22 Iunij	8	24	3 Dec.	g	1 A	8 A	14

New-calendar leaf (*Tabula Festorum* / *Calend. Greg.*), A.D.
4176–4231 — folio 472

Columns: A.D. | Golden number [*Aur. Num.*] | Epact [*Epactæ*] | Dominical letter(s), Gregorian | Mean full moon, Gregorian [*Plenilunia media*] (day · hour · month) | Luna 14, Gregorian | Septuagesima | Ash Wednesday [*Dies Cinerum*] | Easter, new cal. [*Pascha Calend. noui*] | Ascension [*Ascensio Domini*]

•

.	Ep	Dom.	Mean full moon	Lun	Septuag	Ash	Easter	Asce
.	act	letter	(d·h·mo)	a 14	esima	Wed	(nov.)	nsion
4 1 7 6	v	g f	7 · 8 · A	8 A	11 Feb.	28 Feb.	14 A	23 Maij
4 1 7 7	xvj	e	27 · 17 · M	28 M	26 Ian.	12 Feb.	30 M	8 Maij
4 1 7 8	xx vij	d	15 · 14 · A	16 A	15 Feb.	4 Mar.	19 A	28 Maij
4 1 7 9	viiij	c	4 · 23 · A	5 A	7 Feb.	24 Feb.	11 A	20 Maij

A . D .	Ep act	Dom. letter	Mean full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed .	Easter (nov.)	Asce nsion
4 1 8 0	xx	b A	24 · 8 · M	24 M	23 Ian.	9 Feb.	26 M	4 Maij
4 1 8 1	j	g	12 · 5 · A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
4 1 8 2	xii	f	1 · 14 · A	1 A	4 Feb.	21 Feb.	7 A	16 Maij
4 1 8 3	xxi ij	e	21 · 23 · M	21 M	19 Ian.	5 Feb.	23 M	1 Maij
4 1 8 4	iiij	d c	8 · 20 · A	9 A	8 Feb.	25 Feb.	11 A	20 Maij
4 1 8 5	xv	b	29 · 5 · M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
4 1 8 6	xx vj	A	17 · 3 · A	17 A	19 Feb.	8 Mar.	23 A	1 Iunij
4 1 8 7	vij	g	6 · 12 · A	6 A	4 Feb.	21 Feb.	8 A	17 Maij
4	xvi	f e	25 · 20 · M	26	27 Ian.	13	30 M	8

A . D .	Ep act	Dom. letter	Mean full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed .	Easter (nov.)	Asce nsion
1 8 8	ij			M		Feb.		Maij
4 1 8 9	xxi x	d	13 · 18 · A	14 A	15 Feb.	4 Mar.	19 A	28 Maij
4 1 9 0	x	c	3 · 3 · A	3 A	31 Ian.	17 Feb.	4 A	13 Maij
4 1 9 1	xxj	b	23 · 12 · M	23 M	23 Ian.	9 Feb.	27 M	5 Maij
4 1 9 2	ij	A g	10 · 9 · A	11 A	12 Feb.	29 Feb.	15 A	24 Maij
4 1 9 3	xiiij	f	30 · 18 · M	31 M	3 Feb.	20 Feb.	7 A	16 Maij
4 1 9 4	xxi iiij	e	18 · 16 · A	18 A	16 Feb.	5 Mar.	20 A	29 Maij
4 1 9 5	v	d	8 · 0 · A	8 A	8 Feb.	25 Feb.	12 A	21 Maij
4 1	xvj	c b	27 · 9 · M	28 M	31 Ian.	17 Feb.	3 A	12 Maij

A . D .	Ep act	Dom. letter	Mean full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed .	Easter (nov.)	Asce nsion
9 6 4 1 9 7	xx vij	A	15 · 7 · A	16 A	19 Feb.	8 Mar.	23 A	1 Iunij
4 1 9 8	viiij	g	4 · 16 · A	5 A	4 Feb.	21 Feb.	8 A	17 Maij
4 1 9 9	xx	f	25 · 0 · M	24 M	27 Ian.	13 Feb.	31 M	9 Maij
4 2 0 0	*	e	13 · 22 · A	13 A	16 Feb.	5 Mar.	20 A	29 Maij
4 2 0 1	xi	d	2 · 7 · A	2 A	1 Feb.	18 Feb.	5 A	14 Maij
4 2 0 2	xxi j	c	22 · 15 · M	22 M	24 Ian.	10 Feb.	28 M	6 Maij
4 2 0 3	iiij	b	10 · 13 · A	10 A	13 Feb.	2 Mar.	17 A	26 Maij
4 2 0	xii ij	A g	29 · 22 · M	30 M	29 Ian.	15 Feb.	1 A	10 Maij

A . D .	Ep act	Dom. letter	Mean full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed .	Easter (nov.)	Asce nsion
4								
4 2 0 5	xx v	f	17 · 19 · A	18 A	17 Feb.	6 Mar.	21 A	30 Maij
4 2 0 6	vi	e	7 · 4 · A	7 A	9 Feb.	26 Feb.	13 A	22 Maij
4 2 0 7	xvi j	d	27 · 13 · M	27 M	25 Ian.	11 Feb.	29 M	7 Maij
4 2 0 8	xx vii i	c b	14 · 11 · A	15 A	14 Feb.	2 Mar.	17 A	26 Maij
4 2 0 9	ix	A	3 · 19 · A	4 A	5 Feb.	22 Feb.	9 A	18 Maij
4 2 1 0	xx	g	24 · 4 · M	24 M	21 Ian.	7 Mar.	25 M	3 Maij
4 2 1 1	j	f	12 · 2 · A	12 A	10 Feb.	27 Feb.	14 A	23 Maij
4 2 1 2	xij	e d	31 · 11 · M	1 A	2 Feb.	19 Feb.	5 A	14 Maij

A . D .	Ep act	Dom. letter	Mean full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed .	Easter (nov.)	Asce nsion
4 2 1 3	xxi ij	c	20 · 19 · M	21 M	24 Ian.	10 Feb.	28 M	6 Maij
4 2 1 4	iiij	b	8 · 17 · A	9 A	6 Feb.	23 Feb.	10 A	19 Maij
4 2 1 5	xv	A	29 · 2 · M	29 M	29 Ian.	15 Feb.	2 A	11 Maij
4 2 1 6	xx vj	g f	15 · 23 · A	17 A	18 Feb.	6 Mar.	21 A	30 Maij
4 2 1 7	vij	e	5 · 8 · A	6 A	9 Feb.	26 Feb.	13 A	22 Maij
4 2 1 8	xix	d	25 · 17 · M	25 M	25 Ian.	11 Feb.	29 M	7 Maij
4 2 1 9	*	c	13 · 14 · A	13 A	14 Feb.	3 Mar.	18 A	27 Maij
4 2 2 0	xj	b A	1 · 23 · A	2 A	6 Feb.	23 Feb.	9 A	18 Maij
4	xxi	g	22 · 8 · M	22	21 Ian.	7	25 M	3

A . D .	Ep act	Dom. letter	Mean full moon (d·h·mo)	Lun a 14	Septuag esima	Ash Wed .	Easter (nov.)	Asce nsion
2 2 1	i			M		Feb.		Maij
4 2 2 2	iiij	f	10 · 6 · A	10 A	10 Feb.	27 Feb.	14 A	23 Maij
4 2 2 3	xii ij	e	30 · 14 · M	30 M	3 Feb.	20 Feb.	6 A	15 Maij
4 2 2 4	xx v	d c	17 · 12 · A	18 A	22 Feb.	10 Mar.	25 A	3 Iunij
4 2 2 5	vj	b	6 · 21 · A	7 A	6 Feb.	23 Feb.	10 A	19 Maij
4 2 2 6	xvi i	A	27 · 6 · M	27 M	29 Ian.	15 Feb.	2 A	11 Maij
4 2 2 7	xx viiij	g	15 · 3 · A	15 A	18 Feb.	7 Mar.	22 A	31 Maij
4 2 2 8	ix	f e	3 · 12 · A	4 A	3 Feb.	20 Feb.	6 A	15 Maij
4 2	xx	d	23 · 21 · M	24 M	25 Ian.	11 Feb.	29 M	7 Maij

A										
.										
D	Pente	Corpus	Indi	Sund. p.	Adve	Dom.	Lun	Easter	Di	
.	cost	Christi	ct.	Pent.	nt I	letter	a 14	(vet.)	ff.	
4	30	10 Iunij	12	25	28	b	17	24 A	42	
1	Maij				Nou.		A			
7										
9										
4	14	25 Maij	13	28	3	A g	5 A	8 A	42	
1	Maij				Dec.					
8										
0										
4	3	14 Iunij	14	25	2	f	25	31 M	14	
1	Iunij				Dec.		M			
8										
1										
4	26	6 Iunij	15	26	1	e	13	20 A	42	
1	Maij				Dec.		A			
8										
2										
4	11	22 Maij	1	28	30	d	2 A	5 A	42	
1	Maij				Nou.					
8										
3										
4	30	10 Iunij	2	25	28	c b	22	27 M	14	
1	Maij				Nou.		M			
8										
4										
4	22	2 Iunij	3	26	27	A	10	16 A	42	
1	Maij				Nou.		A			
8										
5										
4	11	22 Iunij	4	24	3	g	30	1 A	7	
1	Iunij				Dec.		M			
8										
6										
4	27	7 Iunij	5	26	2	f	18	21 A	42	

A										
.										
D	Pente	Corpus	Indi	Sund. p.	Adve	Dom.	Lun	Easter	Di	
.	cost	Christi	ct.	Pent.	nt I	letter	a 14	(vet.)	ff.	
1	Maij				Dec.		A			
8										
7										
4	18	29 Maij	6	27	30	e d	7 A	12 A	42	
1	Maij				Nou.					
8										
8										
4	7	18 Iunij	7	24	29	c	27	28 M	7	
1	Iunij				Nou.		M			
8										
9										
4	23	3 Iunij	8	26	28	b	15	17 A	42	
1	Maij				Nou.		A			
9										
0										
4	15	26 Maij	9	27	27	A	4 A	9 A	42	
1	Maij				Nou.					
9										
1										
4	3	14 Iunij	10	25	2	g f	24	31 M	14	
1	Iunij				Dec.		M			
9										
2										
4	26	6 Iunij	11	26	1	e	12	13 A	35	
1	Maij				Dec.		A			
9										
3										
4	8	19 Iunij	12	24	30	d	1 A	5 A	14	
1	Iunij				Nou.					
9										
4										
4	31	11 Iunij	13	25	29	c	21	28 M	14	
1	Maij				Nou.		M			

A D .	Pente cost	Corpus Christi	Indi ct.	Sund. p. Pent.	Adve nt I	Dom. letter	Lun a 14	Easter (vet.)	Di ff.
9 5									
4 1 9 6	22 Maij	2 Iunij	14	26	27 Nou.	b A	9 A	16 A	42
4 1 9 7	11 Iunij	22 Iunij	15	24	3 Dec.	g	29 M	1 A	7
4 1 9 8	27 Maij	7 Iunij	1	26	2 Dec.	f	17 A	21 A	42
4 1 9 9	19 Maij	30 Maij	2	27	1 Dec.	e	5 A	6 A	35
4 2 0 0	8 Iunij	19 Iunij	3	24	30 Nou.	d c	25 M	28 M	7
4 2 0 1	24 Maij	4 Iunij	4	26	29 Nou.	b	13 A	17 A	42
4 2 0 2	16 Maij	27 Maij	5	27	28 Nou.	A	2 A	9 A	42
4 2 0	5 Iunij	16 Iunij	6	24	27 Nou.	g	22 M	25 M	7

A	D	Pente cost	Corpus Christi	Indi ct.	Sund. p. Pent.	Adve nt I	Dom. letter	Lun a 14	Easter (vet.)	Di ff.
3										
4204	20 Maij	31 Maij	7	27	2 Dec.	f e		10 A	13 A	42
4205	9 Iunij	20 Iunij	8	24	1 Dec.	d		30 M	5 A	14
4206	1 Iunij	12 Iunij	9	25	30 Nou.	c		18 A	25 A	42
4207	17 Maij	28 Maij	10	27	29 Nou.	b		7 A	10 A	42
4208	5 Iunij	16 Iunij	11	24	27 Nou.	A g		27 M	1 A	14
4209	28 Maij	8 Iunij	12	26	3 Dec.	f		15 A	21 A	42
4210	13 Maij	24 Maij	13	28	2 Dec.	e		4 A	6 A	42
4211	2 Iunij	13 Iunij	14	25	1 Dec.	d		24 M	29 M	14

A

D .	Pente cost	Corpus Christi	Indi ct.	Sund. p. Pent.	Adve nt I	Dom. letter	Lun a 14	Easter (vet.)	Di ff.
4 2 1 2	24 Maij	4 Iunij	15	26	29 Nou.	c b	12 A	17 A	42
4 2 1 3	16 Maij	27 Maij	1	27	28 Nou.	A	1 A	2 A	35
4 2 1 4	29 Maij	9 Iunij	2	25	27 Nou.	g	21 M	25 M	14
4 2 1 5	21 Maij	1 Iunij	3	27	3 Dec.	f	9 A	14 A	42
4 2 1 6	9 Iunij	20 Iunij	4	24	1 Dec.	e d	29 M	5 A	14
4 2 1 7	1 Iunij	12 Iunij	5	25	30 Nou.	c	17 A	18 A	35
4 2 1 8	17 Maij	28 Maij	6	27	29 Nou.	b	5 A	10 A	42
4 2 1 9	6 Iunij	17 Iunij	7	24	28 Nou.	A	25 M	26 M	7
4	28	8 Iunij	8	26	3	g f	13	14 A	35

A										
.										
D	Pente	Corpus	Indi	Sund. p.	Adve	Dom.	Lun	Easter	Di	
.	cost	Christi	ct.	Pent.	nt I	letter	a 14	(vet.)	ff.	
2	Maij				Dec.		A			
2										
0										
4	13	24 Maij	9	28	2	e	2 A	6 A	42	
2	Maij				Dec.					
2										
1										
4	2	13 Iunij	10	25	1	d	22	29 M	14	
2	Iunij				Dec.		M			
2										
2										
4	25	5 Iunij	11	26	30	c	10	11 A	35	
2	Maij				Nou.		A			
2										
3										
4	13	24 Iunij	12	23	28	b A	30	2 A	7	
2	Iunij				Nou.		M			
2										
4										
4	29	9 Iunij	13	25	27	g	18	22 A	42	
2	Maij				Nou.		A			
2										
5										
4	21	1 Iunij	14	27	3	f	7 A	14 A	42	
2	Maij				Dec.					
2										
6										
4	10	21 Iunij	15	24	2	e	27	30 M	7	
2	Iunij				Dec.		M			
2										
7										
4	25	5 Iunij	1	26	30	d c	15	18 A	42	
2	Maij				Nou.		A			

A										
.										
D	Pente	Corpus	Indi	Sund. p.	Adve	Dom.	Lun	Easter	Di	
.	cost	Christi	ct.	Pent.	nt I	letter	a 14	(vet.)	ff.	
2										
8										
4	17	28 Maij	2	27	29	b	4 A	10 A	42	
2	Maij				Nou.					
2										
9										
4	6	17 Iunij	3	24	28	A	24	26 M	7	
2	Iunii				Nou.		M			
3										
0										
4	22	2 Iunij	4	26	27	g	12	15 A	42	
2	Maij				Nou.		A			
3										
1										

Caput XXII — *Tabula Festorum Mobilium Temporaria* (continued)

Table of the Movable Feasts for the successive periods (1600–5000), continued. Each opening pairs a Gregorian ("new-calendar") leaf with its old-calendar ("veteris") continuation. The three leaves of this batch cover A.D. 4232–4287 (Gregorian leaf + old-calendar continuation) and A.D. 4288–4343 (Gregorian leaf; its old-calendar continuation falls on the following leaf).

Column key (Gregorian leaves): A.D. year | Golden Number (*Aureus Numerus*) | Epact (*Epactæ*) | Gregorian Dominical letter(s) (*Literæ Dominicales Calend. Gregor.*; two in leap years) | Mean full moon (*Plenilunia media Calend. Gregor.*), given as **day · hour · month** where **M** = March (*Martii*), **A** = April (*Aprilis*) | Luna XIV (*Lunæ xiiii Calendarii Gregoriani*), day · month | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter of the new calendar (*Pascha Calend. novi*) | Ascension (*Ascensio Domini*).

Month abbreviations, numeral forms, and terminal i-/j- sorts are transcribed per cell as printed (not normalized). The mean-full-moon **hour** sub-column is the

smallest type on the page and is read at the limit of what the scan resolves; those figures are provisional.

Tabula Festorum Mobilium — Gregorian-calendar leaf (A.D. 4232–4287)

[Printed page 474.]

A										
.	D	Aur.	Ep	Lit.	Plenilunium	Lun	Septuag	Dies	Pascha	Asce
.		Num.	act	Dom.	(D. H mo)	a	esima	Cineru	nov.	nsio
.						XIV		m		
4	15	xx	A g	20. 12 M	21	22 Ian.	8 Febr.	25 M	3	
2		iii			M					Maij
3										
2										
4	16	iiij	f	8. 9 A	9 A	10	27	14 A	23	
2						Febr.	Febr.		Maij	
3										
3										
4	17	xv	e	28. 18 M	29	26 Ian.	12	30 M	8	
2					M		Febr.		Maij	
3										
4										
4	18	xx	d	16. 16 A	17 A	15	4 Mar.	19 A	28	
2		vi				Febr.			Maij	
3										
5										
4	19	vij	ç b	5. 1 A	6 A	7 Febr.	24	10 A	19	
2							Febr.		Maij	
3										
6										
4	1	xi	A	25. 9 M	25	22 Ian.	8 Febr.	26 M	4	
2		x			M				Maij	
3										
7										
4	2	*	g	13. 7 A	13 A	11	28 Febr.	15 A	24	
2						Febr.			Maij	

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
3 8									
4 2 3 9	3	xi	f	2. 16 A	2 A	3 Febr.	20 Febr.	7 A	16 Maij
4 2 4 0	4	xx ii	e d	22. 1 M	22 M	26 Ian.	12 Febr.	29 M	7 Maij
4 2 4 1	5	iiij	c	9. 22 A	10 A	7 Febr.	24 Febr.	11 A	20 Maij
4 2 4 2	6	xii ij	b	30. 7 M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
4 2 4 3	7	xx v	A	18. 4 A	18 A	19 Febr.	8 Mar.	23 A	1 Iuni j
4 2 4 4	8	vi	g f	6. 13 A	7 A	11 Febr.	28 Febr.	14 A	23 Maij
4 2 4 5	9	xv ii	e	26. 22 M	27 M	26 Ian.	12 Febr.	30 M	8 Maij
4 2 4	10	xx vii i	d	14. 20 A	15 A	15 Febr.	4 Mar.	19 A	28 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
6									
4 2 4 7	11	ix	c	4. 4 A	4 A	7 Febr.	24 Febr.	11 A	20 Maij
4 2 4 8	12	xx	b A	23. 13 M	24 M	23 Ian.	9 Febr.	26 M	4 Maij
4 2 4 9	13	j	g	11. 11 A	12 A	11 Febr.	28 Febr.	15 A	24 Maij
4 2 5 0	14	xij	f	31. 20 M	1 A	3 Febr.	20 Febr.	7 A	16 Maij
4 2 5 1	15	xx iij	e	21. 4 M	21 M	19 Ian.	5 Febr.	23 M	1 Maij
4 2 5 2	16	iiij	d c	8. 2 A	9 A	8 Febr.	25 Febr.	11 A	20 Maij
4 2 5 3	17	xv	b	28. 11 M	29 M	30 Ian.	16 Febr.	3 A	12 Maij
4 2 5 4	18	xx vi	A	16. 8 A	17 A	19 Febr.	8 Mart.	23 A	1 Iuni j

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
4 2 5 5	19	vij	g	5. 17 A	6 A	4 Febr.	21 Febr.	8 A	17 Maij
4 2 5 6	1	xi x	f e	25. 2 M	25 M	27 Ian.	13 Febr.	30 M	8 Maij
4 2 5 7	2	*	d	12. 23 A	13 A	15 Febr.	4 Mar.	19 A	28 Maij
4 2 5 8	3	xi	c	2. 8 A	2 A	31 Ian.	17 Febr.	4 A	13 Maij
4 2 5 9	4	xx ij	b	22. 17 M	22 M	23 Ian.	9 Febr.	27 M	5 Maii
4 2 6 0	5	iii	A g	9. 15 A	10 A	12 Febr.	29 Febr.	15 A	24 Maij
4 2 6 1	6	xii ii	f	29. 23 M	30 M	27 Ian.	13 Febr.	31 M	9 Maij
4 2 6 2	7	xx v	e	17. 21 A	18 A	16 Febr.	5 Mart.	20 A	29 Maij
4	8	vi	d	7. 6 A	7 A	8 Febr.	25	12 A	21

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
2 6 3							Febr.		Maij
4 2 6 4	9	xv ii	c b	26. 15 M	27 M	31 Ian.	17 Febr.	3 A	12 Maij
4 2 6 5	10	xx vii i	A	14. 12 A	15 A	12 Febr.	1 Mart.	16 A	25 Maij
4 2 6 6	11	ix	g	3. 21 A	4 A	4 Febr.	21 Febr.	8 A	17 Maij
4 2 6 7	12	xx	f	24. 6 M	24 M	27 Ian.	13 Febr.	31 M	9 Maij
4 2 6 8	13	j	e d	11. 3 A	12 A	16 Febr.	4 Mart.	19 A	28 Maij
4 2 6 9	14	xii	c	31. 12 M	1 A	31 Ian.	17 Febr.	4 A	13 Maij
4 2 7 0	15	xx iii	b	20. 21 M	21 M	23 Ian.	9 Febr.	27 M	5 Maii
4 2	16	iiii	A	8. 19 A	9 A	12 Febr.	1 Mart.	16 A	25 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
7 1 4 2 7 2	17	xv	g f	28. 3 M	29 M	28 Ian.	14 Febr.	31 M	9 Maij
4 2 7 3	18	xx vi	e	16. 1 A	17 A	16 Febr.	5 Mart.	20 A	29 Maij
4 2 7 4	19	vii	d	5. 10 A	6 A	8 Febr.	25 Febr.	12 A	21 Maij
4 2 7 5	1	xi x	c	25. 18 M	25 M	24 Ian.	10 Febr.	28 M	6 Maij
4 2 7 6	2	*	b A	12. 16 A	13 A	13 Febr.	1 Mart.	16 A	25 Maij
4 2 7 7	3	xi	g	2. 1 A	2 A	4 Febr.	21 Febr.	8 A	17 Maij
4 2 7 8	4	xx ii	f	22. 10 M	22 M	20 Ian.	6 Febr.	24 M	2 Maij
4 2 7	5	iii	e	10. 7 A	10 A	9 Febr.	26 Febr.	13 A	22 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
9									
4 2 8 0	6	xii ii	d c	29. 16 M	30 M	1 Febr.	18 Febr.	4 A	13 Maij
4 2 8 1	7	xx v	b	17. 4 A	18 A	20 Febr.	9 Mart.	24 A	2 Iuni j
4 2 8 2	8	vj	A	6. 22 A	7 A	5 Febr.	22 Febr.	9 A	18 Maij
4 2 8 3	9	xv ii	g	27. 7 M	27 M	28 Ian.	14 Febr.	1 A	10 Maij
4 2 8 4	10	xx vii i	f e	14. 5 A	15 A	17 Febr.	5 Mart.	20 A	29 Maij
4 2 8 5	11	ix	d	3. 14 A	4 A	1 Febr.	18 Febr.	5 A	14 Maij
4 2 8 6	12	xx	c	23. 22 M	24 M	24 Ian.	10 Febr.	28 M	6 Maij
4 2 8 7	13	j	b	11. 20 A	12 A	13 Febr.	2 Mart.	17 A	26 Maij

Tabula Festorum Mobilium — old-calendar continuation (A.D. 4232–4287)

[Printed page 475. Running head: CAPVT XXII. MOBILIVM TEMPORARIA.]

Column key (old-calendar continuation): A.D. year | Pentecost (*Pentecoste*) | Corpus Christi (*Corpus Domini*) | Indiction (*Indictio*) | Sundays after Pentecost (*Dominicæ post Pentecosten*) | First Sunday of Advent (*Dominica prima Adventus*; **Nou.** = November, **Dec.** = December) | old-calendar Dominical letter(s) (*Literæ Dominicales Calendarij veteris*) | old-calendar Luna XIV (*Lunæ xiiij Calendarij veteris*) | old-calendar Easter (*Pascha Calendarij veteris*) | Days by which the new-calendar Easter differs from the old-calendar Easter (*Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt*).

A									D
.	Pent		In		Lit.	Luna			i
D	ecost		dic	Dñicæ p.	Dom.	XIV	Pasch	ff	
.	e	Corpus Domini	t.	Pent.	I Adv.	vet.	a vet.	.	
4	13	24 Maij	5	28	2 Dec.	f e	1 A	6 A	4
2	Maij								2
3									
2									
4	2	13 Iunij	6	27	1 Dec.	d	21 M	22 M	7
2	Iunij								
3									
3									
4	18	29 Maij	7	25	30	c	9 A	11 A	4
2	Maij				Nou.				2
3									
4									
4	7	18 Iunij	8	24	29	b	29 M	3 A	1
2	Iunij				Nou.				4
3									
5									
4	29	9 Iunij	9	25	27	A g	17 A	22 A	4
2	Maij				Nou.				2
3									
6									
4	14	25 Iunij [recte:	10	28	3 Dec.	f	5 A	7 A	4

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñicæ p. Pent.	Dom. I Adv.	Lit. Dom. vet.	Luna XIV vet.	Pasch a vet.	D i ff .
2 3 7	Maij	25 Maij]							2
4 2 3 8	3 Iunij	14 Iunij	11	25	2 Dec.	e	25 M	30 M	1 4
4 2 3 9	26 Maij	6 Iunij	12	26	1 Dec.	d	13 A	9 A	4 2
4 2 4 0	17 Maij	28 Maij	13	27	29 Nou.	c b	2 A	3 A	3 5
4 2 4 1	30 Maij	10 Iunij	14	25	28 Nou.	A	22 M	26 M	1 4
4 2 4 2	22 Maij	2 Iunij	15	26	27 Nou.	g	10 A	15 A	4 2
4 2 4 3	11 Iunij	22 Iunij	1	24	3 Dec.	f	30 M	31 M	7
4 2 4 4	2 Iunij	13 Iunij	2	25	1 Dec.	e d	18 A	19 A	3 5
4 2	18 Maij	29 Maij	3	27	30 Nou.	c	7 A	11 A	4 2

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñicæ p. Pent.	Dom. I Adv.	Lit. Dom. vet.	Luna XIV vet.	Pasch a vet.	D i ff .
4 2 6 2	8 Iunij	19 Iunij	5	24	30 Nou.	c	30 M	4 A	1 4
4 2 6 3	31 Maij	11 Iunij	6	25	29 Nou.	b	18 A	24 A	4 2
4 2 6 4	22 Maij	2 Iunij	7	26	27 Nou.	A g	7 A	8 A	3 5
4 2 6 5	4 Iunij	15 Iunij	8	25	3 Dec.	f	27 M	31 M	1 4
4 2 6 6	27 Maij	7 Iunij	9	26	2 Dec.	e	15 A	20 A	4 2
4 2 6 7	19 Maij	30 Maij	10	27	1 Dec.	d	4 A	5 A	3 5
4 2 6 8	7 Iunij	18 Iunij	11	24	29 Nou.	c b	24 M	27 M	7
4 2 6 9	23 Maij	3 Iunij	12	26	28 Nou.	A	12 A	16 A	4 2
4	15	26 Maij	13	27	27	g	1 A	8 A	4

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñicæ p. Pent.	Dom. I Adv.	Lit. Dom. vet.	Luna XIV vet.	Pasch a vet.	D i ff .
2 7 0	Maij				Nou.				2
4 2 7 1	4 Iunij	15 Iunij	14	25	3 Dec.	f	21 M	24 M	7
4 2 7 2	19 Maij	30 Maij	15	27	1 Dec.	e d	9 A	12 A	4 2
4 2 7 3	8 Iunij	19 Iunij	1	24	30 Nou.	c	29 M	4 A	1 4
4 2 7 4	31 Maij	11 Iunij	2	25	29 Nou.	b	17 A	24 A	4 2
4 2 7 5	16 Maij	27 Maij	3	27	28 Nou.	A	5 A	9 A	4 2
4 2 7 6	4 Iunii	15 Iunij	4	25	3 Dec.	g f	25 M	31 M	1 4
4 2 7 7	27 Maij	7 Iunij	5	26	2 Dec.	e	13 A	20 A	4 2
4 2	12 Maij	23 Maij	6	28	1 Dec.	d	2 A	5 A	4 2

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñicæ p. Pent.	Dom. I Adv.	Lit. Dom. vet.	Luna XIV vet.	Pasch a vet.	D i ff .
7									
8									
4 2 7	1 Iunij	12 Iunij	7	25	30 Nou.	c	22 M	28 M	1 4
9									
4 2 8	23 Maij	3 Iunij	8	26	28 Nou.	b A	10 A	16 A	4 2
0									
4 2 8	12 Iunij	23 Iunij	9	23	27 Nou.	g	30 M	1 A	7
1									
4 2 8	28 Maij	8 Iunij	10	26	3 Dec.	f	18 A	21 A	4 2
2									
4 2 8	20 Maij	31 Maij	11	27	2 Dec.	e	7 A	13 A	4 2
3									
4 2 8	8 Iunij	19 Iunij	12	24	30 Nou.	d c	27 M	28 M	7
4									
4 2 8	24 Maij	4 Iunij	13	26	29 Nou.	b	15 A	17 A	4 2
5									
4 2 8	16 Maij	27 Maij	14	27	28 Nou.	A	4 A	9 A	4 2

A	Pent	In	Lit.	Luna	D
. ecost	dic	Dñicæ p.	Dom.	XIV	i
. e	Corpus Domini	t. Pent.	I Adv.	vet.	ff .
6					
4 5	16 Iunij	15 24	27 g	24 M	25 M 7
2 Iunij			Nou.		
8					
7					

[Printed page 476.] Columns as on the first leaf above.

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
2									
4 2 9 3	19	vij	A	5. 2 A	6 A	5 Febr.	22 Febr.	9 A	18 Maij
4 2 9 4	1	xi x	g	25. 11 M	25 M	28 Ian.	14 Febr.	1 A	10 Maij
4 2 9 5	2	*	f	13. 9 A	13 A	10 Febr.	27 Febr.	14 A	23 Maij
4 2 9 6	3	xi	e d	1. 17 A	2 A	2 Febr.	19 Febr.	5 A	14 Maij
4 2 9 7	4	xx ii	c	22. 2 M	22 M	24 Ian.	10 Febr.	28 M	6 Maij
4 2 9 8	5	iii	b	10. 0 A	10 A	13 Febr.	2 Mart.	17 A	26 Maij
4 2 9 9	6	xii ii	A	30. 9 M	30 M	29 Ian.	15 Febr.	2 A	11 Maij
4 3 0 0	7	xx v	g	19. 6 A	18 A	18 Febr.	7 Mart.	22 A	31 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
4 3 0 1	8	vj	f	7. 15 A	7 A	10 Febr.	27 Febr.	14 A	23 Maij
4 3 0 2	9	xv ii	e	28. 0 M	27 M	26 Ian.	12 Febr.	30 M	8 Maij
4 3 0 3	10	xx vii i	d	15. 21 A	15 A	15 Febr.	4 Mart.	19 A	28 Maij
4 3 0 4	11	ix	c b	4. 6 A	4 A	7 Febr.	24 Febr.	10 A	19 Maij
4 3 0 5	12	xx	A	24. 15 M	24 M	22 Ian.	8 Febr.	26 M	4 Maij
4 3 0 6	13	j	g	12. 12 A	12 A	11 Febr.	28 Febr.	15 A	24 Maij
4 3 0 7	14	xij	f	1. 21 A	1 A	3 Febr.	20 Febr.	7 A	16 Maij
4 3 0 8	15	xx iii	e d	21. 6 M	21 M	19 Ian.	5 Febr.	22 M	30 Apr.
4	16	iiij	c	9. 4 A	9 A	7 Febr.	24	11 A	20

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
3 0 9							Febr.		Maij
4 3 1 0	17	xv	b	29. 12 M	29 M	30 Ian.	16 Febr.	3 A	12 Maij
4 3 1 1	18	xx vi	A	17. 10 A	17 A	19 Febr.	8 Mart.	23 A	1 Iuni j
4 3 1 2	19	vij	g f	5. 19 A	6 A	4 Febr.	21 Febr.	7 A	16 Maij
4 3 1 3	1	xi x	e	26. 3 M	25 M	26 Ian.	12 Febr.	30 M	8 Maij
4 3 1 4	2	*	d	14. 1 A	13 A	15 Febr.	4 Mart.	19 A	28 Maij
4 3 1 5	3	xi	c	3. 10 A	2 A	31 Ian.	17 Febr.	4 A	13 Maij
4 3 1 6	4	xx ii	b A	22. 19 M	22 M	23 Ian.	9 Febr.	26 M	4 Maij
4 3	5	iiij	g	10. 16 A	10 A	11 Febr.	28 Febr.	15 A	24 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
1 7									
4 3 1 8	6	xii ij	f	31. 1 M	30 M	27 Ian.	13 Febr.	31 M	9 Maij
4 3 1 9	7	xx v	e	18. 23 A	18 A	16 Febr.	5 Mar.	20 A	29 Maij
4 3 2 0	8	vi	d c	7. 7 A	7 A	8 Febr.	25 Febr.	11 A	20 Maij
4 3 2 1	9	xv ii	b	27. 16 M	27 M	30 Ian.	16 Febr.	3 A	12 Maij
4 3 2 2	10	xx vii i	A	15. 14 A	15 A	12 Febr.	1 Mart.	16 A	25 Maij
4 3 2 3	11	ix	g	4. 23 A	4 A	4 Febr.	21 Febr.	8 A	17 Maij
4 3 2 4	12	xx	f e	24. 7 M	24 M	27 Ian.	13 Febr.	30 M	8 Maij
4 3 2	13	j	d	12. 5 A	12 A	15 Febr.	4 Mart.	19 A	28 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
5									
4 3 2 6	14	xij	c	1. 14 A	1 A	31 Ian.	17 Febr.	4 A	13 Maij
4 3 2 7	15	xx ij	b	21. 23 M	21 M	23 Ian.	9 Febr.	27 M	5 Maij
4 3 2 8	16	iiij	A g	8. 20 A	9 A	12 Febr.	29 Feb.	15 A	24 Maij
4 3 2 9	17	xv	f	29. 5 M	29 M	27 Ian.	13 Febr.	31 M	9 Maij
4 3 3 0	18	xx vi	e	17. 2 A	17 A	16 Febr.	5 Mar.	20 A	29 Maij
4 3 3 1	19	vij	d	6. 11 A	6 A	8 Febr.	25 Febr.	12 A	21 Maij
4 3 3 2	1	xi x	ç b	25. 20 M	25 M	24 Ian.	10 Febr.	27 M	5 Maij
4 3 3 3	2	*	A	13. 13 A	13 A	12 Febr.	1 Mart.	16 A	25 Maij

A . D .	Aur. Num.	Ep act	Lit. Dom.	Plenilunium (D. H mo)	Lun a XIV	Septuag esima	Dies Cineru m	Pascha nov.	Asce nsio
4 3 3 4	3	xi	g	3. 2 A	2 A	4 Febr.	21 Febr.	8 A	17 Maij
4 3 3 5	4	xx ij	f	22. 11 M	22 M	20 Ian.	6 Febr.	24 M	2 Maij
4 3 3 6	5	iii	e d	10. 9 A	10 A	9 Febr.	26 Febr.	12 A	21 Maij
4 3 3 7	6	xii ii	c	30. 18 M	30 M	31 Ian.	17 Febr.	4 A	13 Maij
4 3 3 8	7	xx v	b	18. 15 A	18 A	20 Febr.	9 Mart.	24 A	2 Iuni j
4 3 3 9	8	vi	A	8. 0 A	7 A	5 Febr.	22 Febr.	9 A	18 Maij
4 3 4 0	9	xv ii	g f	27. 9 M	27 M	28 Ian.	14 Febr.	31 M	9 Maij
4 3 4 1	10	xx vii i	e	15. 6 A	15 A	16 Febr.	5 Mart.	20 A	29 Maij
4	11	ix	d	4. 15 A	4 A	1 Febr.	18	5 A	14

A					Lun		Dies		
.					a	Septuag	Cineru	Pascha	Asce
.	Num.	act	Dom.	(D. H mo)	XIV	esima	m	nov.	nsio
3							Febr.		Maij
4									
2									
4	12	xx	c	25. 0 M	24	24 Ian.	10	28 M	6
3					M		Febr.		Maii
4									
3									

Caput XXII continues with the *Tabula Festorum Mobilium Temporaria* (the perpetual table of movable feasts, A.D. 1600–5000), set as paired leaves: a Gregorian (new-calendar) leaf facing an old-calendar (*veteris*) comparison leaf. This span covers A.D. 4288–4399.

The three leaves here are:

1. the old-calendar comparison leaf for **A.D. 4288–4343**, which completes the opening whose facing new-calendar leaf was on the previous folio (folio 477);
2. the new-calendar (Gregorian) leaf for **A.D. 4344–4399** (page 478);
3. the old-calendar comparison leaf for **A.D. 4344–4399** (folio 479).

Conventions preserved verbatim throughout: month tokens as printed (Ian. = January, Febr./Feb. = February, Mart./Mar. = March, Maij/Maii = May, Iunij/Iuni/Iunii = June, Nou. = November, Dec. = December); the letters A = *Aprilis* (April) and M = *Martius* (March) in the Luna-14, Easter, and mean-full-moon columns; the epact asterisk as ASCII *; Roman-numeral epacts with their terminal i-/j-sorts; and the leap-year Jan/Feb dominical letter printed as ç (a cedilla form of c) where it occurs. The **Diff.** column is "the number of days by which Easter of the new Calendar differs from Easter of the old Calendar" (*Dies quibus Pascha Calendarii novi à Paschate Calendarii veteris differt*); its values are all multiples of 7.

Old-calendar comparison leaf — A.D. 4288–4343

The mean full moon, Luna 14, and Easter here are reckoned in the old (Julian) Calendar; Pentecost, Corpus Christi, the Sundays after Pentecost, and the First Sunday of Advent follow from the *new*-calendar Easter of the facing leaf.

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
4 27 2 Ma 8 ij 8	7	Iunii	1	26	2 Dec.	f e	12 A	13 A	3 5
4 12 2 Ma 8 ij 9	23	Maij	2	28	1 Dec.	d	1 A	5 A	4 2
4 1 2 Iun 9 ij 0	12	Iunij	3	25	30 Nou.	c	21 M	28 M	1 4
4 24 2 Ma 9 ij 1	4	Iunij	4	26	29 Nou.	b	9 A	10 A	3 5
4 12 2 Iun 9 ij 2	23	Iunij	5	23	27 Nou.	A g	29 M	1 A	7
4 28 2 Ma 9 ij 3	8	Iunij	6	26	3 Dec.	f	17 A	21 A	4 2
4 20 2 Ma 9 ij 4	31	Maij	7	27	2 Dec.	e	5 A	6 A	3 5
4 2 2 Iun 9 ij 5	13	Iunij	8	25	1 Dec.	d	25 M	29 M	1 4

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
4 2 9 6	24 Ma ij	4 Iunij	9	26	29 Nou.	ç b	13 A	17 A	4 2
4 2 9 7	16 Ma ij	27 Maij	10	27	28 Nou.	A	2 A	9 A	4 2
4 2 9 8	5 Iun ij	16 Iunij	11	24	27 Nou.	g	22 M	25 M	7
4 2 9 9	21 Ma ij	1 Iunij	12	27	3 Dec.	f	10 A	14 A	4 2
4 3 0 0	10 Iun ij	21 Iunij	13	24	2 Dec.	e d	30 M	5 A	1 4
4 3 0 1	2 Iun ij	13 Iunij	14	25	1 Dec.	c	18 A	25 A	4 2
4 3 0 2	18 Ma ij	29 Maij	15	27	30 Nou.	b	7 A	10 A	4 2
4 3 0 3	7 Iun ij	18 Iunij	1	24	29 Nou.	A	27 M	2 A	1 4

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
4 29 3 0 4	Ma ij	9 Iunij	2	25	27 Nou.	g f	15 A	21 A	4 2
4 14 3 0 5	Ma ij	25 Maij	3	28	3 Dec.	e	4 A	6 A	4 2
4 3 3 0 6	Iun ij	14 Iunij	4	25	2 Dec.	d	24 M	29 M	1 4
4 26 3 0 7	Ma ij	6 Iunij	5	26	1 Dec.	c	12 A	18 A	4 2
4 10 3 0 8	Ma ij	21 Maij	6	28	29 Nou.	b A	1 A	2 A	4 2
4 30 3 0 9	Ma ij	10 Iunij	7	25	28 Nou.	g	21 M	25 M	1 4
4 22 3 1 0	Ma ij	2 Iunij	8	26	27 Nou.	f	9 A	14 A	4 2
4 11 3 1 1	Iun ij	22 Iunij	9	24	3 Dec.	e	29 M	30 M	7

A Pe nte D cos t		Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff f .
4 26 3 Ma 1 ij 2	6	Iunij	10	26	1 Dec.	d c	17 A	18 A	4 2
4 18 3 Ma 1 ij 3	29	Maij	11	27	30 Nou.	b	5 A	10 A	4 2
4 7 3 Iun 1 ij 4	18	Iunij	12	24	29 Nou.	A	25 M	26 M	7
4 23 3 Ma 1 ij 5	3	Iunij	13	26	28 Nou.	g	13 A	15 A	4 2
4 14 3 Ma 1 ij 6	25	Maij	14	28	3 Dec.	f e	2 A	6 A	4 2
4 3 3 Iun 1 ij 7	14	Iunij	15	25	2 Dec.	d	22 M	29 M	1 4
4 19 3 Ma 1 ij 8	30	Maij	1	27	1 Dec.	c	10 A	11 A	4 2
4 8 3 Iun 1 ij 9	19	Iunij	2	24	30 Nou.	b	30 M	3 A	1 4

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
4 30 3 Ma 2 ij 0		10 Iunij	3	25	28 Nou.	A g	18 A	22 A	4 2
4 22 3 Ma 2 ij 1		2 Iunij	4	26	27 Nou.	f	7 A	14 A	4 2
4 4 3 Iun 2 ij 2		15 Iunij	5	25	3 Dec.	e	27 M	30 M	1 4
4 27 3 Ma 2 ij 3		7 Iunij	6	26	2 Dec.	d	15 A	19 A	4 2
4 18 3 Ma 2 ij 4		29 Maij	7	27	30 Nou.	c b	4 A	10 A	4 2
4 7 3 Iun 2 ij 5		18 Iunij	8	24	29 Nou.	A	24 M	26 M	7
4 23 3 Ma 2 ij 6		3 Iunij	9	26	28 Nou.	g	12 A	15 A	4 2
4 15 3 Ma 2 ij 7		26 Maij	10	27	27 Nou.	f	1 A	7 A	4 2

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
4 3 3 2 8	Iun ij	14 Iunij	11	25	2 Dec.	e d	21 M	22 M	7
4 19 3 2 9	Ma ij	30 Maij	12	27	1 Dec.	c	9 A	11 A	4 2
4 8 3 3 0	Iun i	19 Iunij	13	24	30 Nou.	b	29 M	3 A	1 4
4 31 3 3 1	Ma ij	11 Iunij	14	25	29 Nou.	A	17 A	23 A	4 2
4 15 3 3 2	Ma ij	26 Maii	15	27	27 Nou.	g f	5 A	7 A	4 2
4 4 3 3 3	Iun ij	15 Iunij	1	25	3 Dec.	e	25 M	30 M	1 4
4 27 3 3 4	Ma ij	7 Iunij	2	26	2 Dec.	d	13 A	19 A	4 2
4 12 3 3 5	Ma ij	23 Maij	3	28	1 Dec.	c	2 A	4 A	4 2

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
4 31 3 Ma 3 ij 6	11 Iunij	4	25	29 Nou.	b A	22 M	26 M	1 4	
4 23 3 Ma 3 ij 7	3 Iunij	5	26	28 Nou.	g	10 A	15 A	4 2	
4 12 3 Iun 3 ij 8	23 Iunij	6	23	27 Nou.	f	30 M	31 M	7	
4 28 3 Ma 3 ij 9	8 Iunij	7	26	3 Dec.	e	18 A	20 A	4 2	
4 19 3 Ma 4 ij 0	30 Maij	8	27	1 Dec.	d c	7 A	11 A	4 2	
4 8 3 Iun 4 ij 1	19 Iunij	9	24	30 Nou.	b	27 M	3 A	1 4	
4 24 3 Ma 4 ij 2	4 Iunij	10	26	29 Nou.	A	15 A	16 A	4 2	
4 16 3 Ma 4 ij 3	27 Maij	11	27	28 Nou.	g	4 A	8 A	4 2	

New-calendar (Gregorian) leaf — A.D. 4344–4399

Columns: golden number (*Aureus Numerus*), epact, Gregorian dominical letter(s), mean full moon in the Gregorian Calendar (given as **day · hour · month-letter**), Luna 14 of the Gregorian Calendar, Septuagesima, Ash Wednesday (*Dies Cinerum*), Easter of the new Calendar, and the Ascension.

A D .	Gold en No	E p a c t	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
4 3 4 4	13	j	b A	11 · 22 A	12 A	13 Febr.	1 Mar.	16 A	25 Mai j
4 3 4 5	14	xi j	g	1 · 6 A	1 A	4 Febr.	21 Febr.	8 A	17 Mai j
4 3 4 6	15	x xi ii	f	21 · 15 M	21 M	20 Ian.	6 Febr.	24 M	2 Mai j
4 3 4 7	16	iii j	e	9 · 13 A	9 A	9 Febr.	26 Febr.	13 A	22 Mai j
4 3 4 8	17	x v	d c	28 · 21 M	29 M	1 Febr.	18 Febr.	4 A	13 Mai j
4 3 4 9	18	x x vi	b	16 · 19 A	17 A	20 Febr.	9 Mart.	24 A	2 Iuni j
4 3 5	19	vi j	A	6 · 4 A	6 A	5 Febr.	22 Febr.	9 A	18 Mai j

A D .	Gold en No	E p a ct	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
0									
4 3 5 1	1	xi x	g	26 · 13 M	25 M	28 Ian.	14 Febr.	1 A	10 Mai j
4 3 5 2	2	* f	e	13 · 10 A	13 A	17 Febr.	5 Mar.	20 A	29 Mai j
4 3 5 3	3	xi d		2 · 19 A	2 A	1 Febr.	18 Febr.	5 A	14 Mai j
4 3 5 4	4	x xi j	c	23 · 4 M	22 M	24 Ian.	10 Febr.	28 M	6 Mai j
4 3 5 5	5	ii j	b	11 · 1 A	10 A	13 Febr.	2 Mart.	17 A	26 Mai j
4 3 5 6	6	xi ii j	A g	30 · 10 M	30 M	29 Ian.	15 Febr.	1 A	10 Mai j
4 3 5 7	7	x x v	f	18 · 8 A	18 A	17 Febr.	6 Mart.	21 A	30 Mai j
4 3 5 8	8	vi e		7 · 17 A	7 A	9 Febr.	26 Febr.	13 A	22 Mai j

A D .	Gold en N _o	E p a c t	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
4 3 5 9	9	x vi i	d	28 · 1 M	27 M	25 Ian.	11 Febr.	29 M	7 Mai j
4 3 6 0	10	x x vi ii	ç b	14 · 23 A	15 A	14 Febr.	2 Mart.	17 A	26 Mai j
4 3 6 1	11	ix	A	4 · 8 A	4 A	5 Febr.	22 Febr.	9 A	18 Mai j
4 3 6 2	12	x x	g	24 · 16 M	24 M	21 Ian.	7 Febr.	25 M	3 Mai j
4 3 6 3	13	j	f	12 · 14 A	12 A	10 Febr.	27 Febr.	14 A	23 Mai j
4 3 6 4	14	xi j	e d	31 · 23 M	1 A	2 Febr.	19 Febr.	5 A	14 Mai j
4 3 6 5	15	x xi ij	c	21 · 8 M	21 M	24 Ian.	10 Febr.	28 M	6 Mai i
4 3 6 6	16	iii j	b	9 · 5 A	9 A	6 Febr.	23 Febr.	10 A	19 Mai j
4	17	x	A	29 · 14 M	29	29	15	2 A	11

A D .	Gold en No	E p a ct	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
3 6 7		v			M	Ian.	Febr.		Mai j
4 3 6 8	18	x x vi	g f	16 · 12 A	17 A	18 Febr.	6 Mart.	21 A	30 Mai j
4 3 6 9	19	vi j	e	5 · 20 A	6 A	9 Febr.	26 Febr.	13 A	22 Mai j
4 3 7 0	1	xi x	d	26 · 5 M	25 M	25 Ian.	11 Febr.	29 M	7 Mai j
4 3 7 1	2	* c		14 · 3 A	13 A	14 Febr.	3 Mar.	18 A	27 Mai j
4 3 7 2	3	xi b A		2 · 12 A	2 A	6 Febr.	23 Febr.	9 A	18 Mai j
4 3 7 3	4	x xi j	g	22 · 20 M	22 M	21 Ian.	7 Febr.	25 M	3 Mai j
4 3 7 4	5	ii j	f	10 · 18 A	10 A	10 Febr.	27 Febr.	14 A	23 Mai j
4 3	6	xi ii j	e	31 · 3 M	30 M	2 Febr.	19 Febr.	6 A	15 Mai

A D .	Gold en No	E p a ct	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
7 5									j
4 3 7 6	7	x x v	d c	18 · 0 A	18 A	22 Febr.	10 Mart.	25 A	3 Iuni j
4 3 7 7	8	vi	b	7 · 9 A	7 A	6 Febr.	23 Febr.	10 A	19 Mai j
4 3 7 8	9	x vi j	A	27 · 18 M	27 M	29 Ian.	15 Febr.	2 A	11 Mai j
4 3 7 9	10	x x vi ij	g	15 · 15 A	15 A	18 Febr.	7 Mart.	22 A	31 Mai j
4 3 8 0	11	ix	f e	4 · 0 A	4 A	3 Febr.	20 Febr.	6 A	15 Mai j
4 3 8 1	12	x x	d	24 · 9 M	24 M	25 Ian.	11 Febr.	29 M	7 Mai j
4 3 8 2	13	j	c	12 · 7 A	12 A	14 Febr.	3 Mart.	18 A	27 Mai j
4 3 8	14	xi j	b	1 · 15 A	1 A	30 Ian.	16 Febr.	3 A	12 Mai j

A D .	Gold en No	E p a ct	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
3									
4 3 8 4	15	x xi ii	A g	21 · 0 M	21 M	22 Ian.	8 Febr.	25 M	3 Mai j
4 3 8 5	16	iii j	f	8 · 22 A	9 A	10 Febr.	27 Febr.	14 A	23 Mai j
4 3 8 6	17	x v	e	29 · 7 M	29 M	26 Ian.	12 Febr.	30 M	8 Mai j
4 3 8 7	18	x x vi	d	17 · 4 A	17 A	15 Febr.	4 Mar.	19 A	28 Mai j
4 3 8 8	19	vi j	c b	5 · 13 A	6 A	7 Febr.	24 Febr.	10 A	19 Mai j
4 3 8 9	1	xi x	A	25 · 22 M	25 M	22 Ian.	8 Febr.	26 M	4 Mai j
4 3 9 0	2	* g		13 · 19 A	13 A	11 Febr.	28 Feb.	15 A	24 Mai j
4 3 9 1	3	xi f		3 · 4 A	2 A	3 Febr.	20 Febr.	7 A	16 Mai j

A D .	Gold en N _o	E p a c t	Dominical (new cal.)	Mean full moon (D · H · mo.)	Lu na 14	Septu agesi ma	Ash Wedn esday	Easter (new cal.)	Asc ensi on
4 3 9 2	4	x xi j	e d	22 · 13 M	22 M	26 Ian.	12 Febr.	29 M	7 Mai j
4 3 9 3	5	ii j	c	10 · 10 A	10 A	7 Febr.	24 Febr.	11 A	20 Mai j
4 3 9 4	6	xi ii j	b	30 · 19 M	30 M	30 Ian.	16 Febr.	3 A	12 Mai j
4 3 9 5	7	x x v	A	18 · 17 A	18 A	19 Febr.	8 Mar.	23 A	1 Iuni j
4 3 9 6	8	v j	g f	7 · 2 A	7 A	11 Febr.	28 Febr.	14 A	23 Mai j
4 3 9 7	9	x vi j	e	27 · 10 M	27 M	26 Ian.	12 Febr.	30 M	8 Mai j
4 3 9 8	10	x x vi ij	d	15 · 8 A	15 A	15 Febr.	4 Mar.	19 A	28 Mai j
4 3 9 9	11	ix	c	4 · 17 A	4 A	7 Febr.	24 Febr.	11 A	20 Mai j

Old-calendar comparison leaf — A.D. 4344–4399

Same layout as the first leaf above (old-calendar mean Luna 14 and Easter; the Pentecost/Corpus/Advent columns follow from the new-calendar Easter of the facing leaf). This leaf is heavily foxed through its middle band; readings were recovered against the column cross-checks and the 19-year Metonic recurrence of the Luna-14 column.

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff f .
4 3 4 4	4 Iun ij	15 Iunij	12	25	3 Dec.	f e	24 M	30 M	1 4
4 3 4 5	27 Ma ij	7 Iunij	13	26	2 Dec.	d	12 A	19 A	4 2
4 3 4 6	12 Ma ij	23 Maij	14	28	1 Dec.	c	1 A	4 A	4 2
4 3 4 7	1 Iun ij	12 Iunij	15	25	30 Nou.	b	21 M	27 M	1 4
4 3 4 8	23 Ma ij	3 Iunij	1	26	28 Nou.	A g	9 A	15 A	4 2
4 3 4 9	12 Iun ij	23 Iunij	2	23	27 Nou.	f	29 M	31 M	7
4	28	8	3	26	3 Dec.	e	17 A	20 A	4

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
3 5 0	Ma ij	Iunij							2
4 3 5 1	20 Ma ij	31 Maij	4	27	2 Dec.	d	5 A	12 A	4 2
4 3 5 2	8 Iun ij	19 Iunij	5	24	30 Nou.	c b	25 M	27 M	7
4 3 5 3	24 Ma ij	4 Iunij	6	26	29 Nou.	A	13 A	16 A	4 2
4 3 5 4	16 Ma ij	27 Maij	7	27	28 Nou.	g	2 A	8 A	4 2
4 3 5 5	5 Iun ij	16 Iunij	8	24	27 Nou.	f	22 M	24 M	7
4 3 5 6	20 Ma ij	31 Maij	9	27	2 Dec.	e d	10 A	12 A	4 2
4 3 5 7	9 Iun ij	20 Iunij	10	24	1 Dec.	c	30 M	4 A	1 4
4 1	1	12	11	25	30 Nou.	b	18 A	24 A	4

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
3 5 8	Iun ij	Iunij							2
4 3 5 9	17 Ma ij	28 Maij	12	27	29 Nou.	A	7 A	9 A	4 2
4 3 6 0	5 Iun ij	16 Iunij	13	24	27 Nou.	g f	27 M	31 M	1 4
4 3 6 1	28 Ma ij	8 Iunij	14	26	3 Dec.	e	15 A	20 A	4 2
4 3 6 2	13 Ma ij	24 Maij	15	28	2 Dec.	d	4 A	5 A	4 2
4 3 6 3	2 Iun ij	13 Iunij	1	25	1 Dec.	c	24 M	28 M	1 4
4 3 6 4	24 Ma ij	4 Iunij	2	26	29 Nou.	b A	12 A	16 A	4 2
4 3 6 5	16 Ma ij	27 Maij	3	27	28 Nou.	g	1 A	8 A	4 2
4 29	9	9	4	25	27 Nou.	f	21 M	24 M	1

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
3 6 6	Ma ij	Iunij							4
4 3 6	21 Ma ij	1 Iunij	5	27	3 Dec.	e	9 A	13 A	4 2
4 3 6	9 Iun ij	20 Iunij	6	24	1 Dec.	d c	29 M	4 A	1 4
4 3 6	1 Iun ij	12 Iunij	7	25	30 Nou.	b	17 A	24 A	4 2
4 3 6	17 Ma ij	28 Maij	8	27	29 Nou.	A	5 A	9 A	4 2
4 3 6	6 Iun ij	17 Iunij	9	24	28 Nou.	g	25 M	1 A	1 4
4 3 6	28 Ma ij	8 Iunij	10	26	3 Dec.	f e	13 A	20 A	4 2
4 3 6	13 Ma ij	24 Maij	11	28	2 Dec.	d	2 A	5 A	4 2
4 2	2	13	12	25	1 Dec.	c	22 M	28 M	1

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
3 7 4	Iun ij	Iunij							4
4 3 7 5	25 Ma ij	5 Iunij	13	26	30 Nou.	b	10 A	17 A	4 2
4 3 7 6	13 Iun ij	24 Iunij	14	23	28 Nou.	A g	30 M	1 A	7
4 3 7 7	29 Ma ij	9 Iunij	15	25	27 Nou.	f	18 A	21 A	4 2
4 3 7 8	21 Ma ij	1 Iunij	1	27	3 Dec.	e	7 A	13 A	4 2
4 3 7 9	10 Iun ij	21 Iunij	2	24	2 Dec.	d	27 M	29 M	7
4 3 8 0	25 Ma ij	5 Iunij	3	26	30 Nou.	c b	15 A	17 A	4 2
4 3 8 1	17 Ma ij	28 Maij	4	27	29 Nou.	A	4 A	9 A	4 2
4 6	6	17	5	24	28 Nou.	g	24 M	25 M	7

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff f .
3 8 2	Iun ij	Iunij							
4 3 8 3	22 Ma ij	2 Iunij	6	26	27 Nou.	f	12 A	14 A	4 2
4 3 8 4	13 Ma ij	24 Maij	7	28	2 Dec.	e d	1 A	5 A	4 2
4 3 8 5	2 Iun ij	13 Iunij	8	25	1 Dec.	c	21 M	28 M	1 4
4 3 8 6	18 Ma ij	29 Maij	9	27	30 Nou.	b	9 A	10 A	4 2
4 3 8 7	7 Iun ij	18 Iunij	10	24	29 Nou.	A	29 M	2 A	1 4
4 3 8 8	29 Ma ij	9 Iunij	11	25	27 Nou.	g f	17 A	21 A	4 2
4 3 8 9	14 Ma ij	25 Maij	12	28	3 Dec.	e	5 A	6 A	4 2
4 3	3 14	14	13	25	2 Dec.	d	25 M	29 M	1

A . D .	Pe nte cos t	Corpu s Christ i	Ind icti on	Sundays after Pent.	1st Sun. of Advent	Dominical letter (old cal.)	Luna 14 (old cal.)	Easter (old cal.)	D i ff .
3 9 0	Iun ij	Iunij							4
4 3 9 1	26 Ma ij	6 Iunij	14	26	1 Dec.	c	13 A	18 A	4 2
4 3 9 2	17 Ma ij	28 Maij	15	27	29 Nou.	b A	2 A	9 A	4 2
4 3 9 3	30 Ma ij	10 Iunij	1	25	28 Nou.	g	22 M	25 M	1 4
4 3 9 4	22 Ma ij	2 Iunij	2	26	27 Nou.	f	10 A	14 A	4 2
4 3 9 5	11 Iun ii	22 Iunij	3	24	3 Dec.	e	30 M	6 A	1 4
4 3 9 6	2 Iun ij	13 Iunij	4	25	1 Dec.	d c	18 A	25 A	4 2
4 3 9 7	18 Ma ij	29 Maij	5	27	30 Nou.	b	7 A	10 A	4 2
4 7	7	18	6	24	29 Nou.	A	27 M	2 A	1

A	Pe	Corpu							D
.	nte	s	Ind	Sundays	1st Sun.	Dominical		Easter	i
D	cos	Christ	icti	after	of	letter (old	Luna 14	(old	ff
.	t	i	on	Pent.	Advent	cal.)	(old cal.)	cal.)	.
3	Iun	Iunij							4
9	ij								
8									
4	30	10	7	25	28 Nou.	g	15 A	22 A	4
3	Ma	Iunij							2
9	ij								
9									

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued, A.D. 4400–4511)

The great table of the movable feasts continues, set across facing leaves: each opening carries a **new-calendar (Gregorian)** leaf on the verso and the matching **old-calendar (veteris)** leaf on the recto, both covering the same block of years. This span covers the block **4400–4455** (Gregorian leaf p. 480; old-calendar leaf p. 481) and the beginning of the next block **4456–4511** (Gregorian leaf p. 482; its old-calendar recto falls on the following leaf).

Month abbreviations as printed: **M** = *Martij* (March), **A** = *Aprilis* (April) in the moon and Easter columns; **Ian./Feb./Mar.** = January/February/March; **Nou./Dec.** = November/December; **Maij/Iunij** = May/June. The mean-full-moon column is set *day · hour · month* (D. H. + M/A). Roman/Arabic figures, i-/j-terminal sorts, the epact-30 asterisk (*), and month-spelling variants are transcribed verbatim per cell.

Leaf 1 — CALEND. GREG. / TABVLA FESTORVM (p. 480), A.D. 4400–4455 (Gregorian)

Columns: A.D. | Golden № (*Aur. Num.*) | Epact (*Epactæ*) | Dominical letter, Greg. (*Lit. Dñicales Calend. Greg.*) | Mean full moon, Greg. (*Plenilunia media Cal. Gregor.*, D. H. mo) | Luna 14, Greg. (*Lunæ xiiij. Calendarij Gregoriani*) | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter, new cal. (*Pascha Calend. noui*) | Ascension (*Ascensio Domini*)

A . D .	Ep .	No act	D m .	Mean (C mo)	full (D. H.	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
4 4 0 0	1 2	xx	b	24. 2 M		24 M	23 Ian.	9 Feb.	26 M	4 Maij
4 4 0 1	1 3	j	g	11. 13 A		12 A	11 Feb.	28 Feb.	15 A	24 Maij
4 4 0 2	1 4	xij	f	1. 8 A		1 A	3 Feb.	20 Feb.	7 A	16 Maij
4 4 0 3	1 5	xxi	e	21. 17 M		21 M	19 Ian.	5 Feb.	23 M	1 Maij
4 4 0 4	1 6	iiij	d	8. 14 A		9 A	8 Feb.	25 Feb.	11 A	20 Maij
4 4 0 5	1 7	xv	b	28. 23 M		29 M	30 Ian.	16 Feb.	3 A	12 Maij
4 4 0 6	1 8	xx	A	16. 21 A		17 A	19 Feb.	8 Mar.	23 A	1 Iunij
4 4 0 7	1 9	vij	g	6. 5 A		6 A	4 Feb.	21 Feb.	8 A	17 Maij
4 4	1	xix	f	25. 14 M		25	27 Ian.	13	30	8

A . D .	Ep .	No act	D .	Mean (mo)	© full (D. H.	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
4 0 8			e			M		Feb.	M	Maij
4 4 0 9	2 *		d	13. 12 A		13 A	15 Feb.	4 Mar.	19 A	28 Maij
4 4 1 0	3 xi		c	2. 21 A		2 A	31 Ian.	17 Feb.	4 A	13 Maij
4 4 1 1	4 xxi j		b	23. 5 M		22 M	23 Ian.	9 Feb.	27 M	5 Maij
4 4 1 2	5 ii j		A g	10. 3 A		10 A	12 Feb.	29 Feb.	15 A	24 Maij
4 4 1 3	6 xiii j		f	30. 12 M		30 M	27 Feb. [recte: 27 Ian.]	13 Feb.	31 M	9 Maij
4 4 1 4	7 xx v		e	18. 9 A		18 A	16 Feb.	5 Mar.	20 A	29 Maij
4 4 1 5	8 vi		d	7. 18 A		7 A	8 Feb.	25 Feb.	12 A	21 Maij
4 4	9 xvi j		c b	27. 3 M		27 M	31 Ian.	17 Feb.	3 A	12 Maij

A . D .	Ep No		act		D o m .	Mean ☾ full (D. H. mo)	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
16	44	10	xxviii	A	15.0	A	15 A	12 Feb.	1 Mar.	16 A	25 Maij
17	44	11	ix	g	4.9	A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
18	44	12	xx	f	24.18	M	24 M	27 Ian.	13 Feb.	31 M	9 Maij
19	44	13	j	e	11.16	A	12 A	16 Feb.	4 Mar.	19 A	28 Maij
20	44	14	xij	c	1.0	A	1 A	31 Ian.	17 Feb.	4 A	13 Maij
21	44	15	xxi	b	21.9	M	21 M	23 Ian.	9 Feb.	27 M	5 Maij
22	44	16	iiij	A	9.7	A	9 A	12 Feb.	1 Mar.	16 A	25 Maij
23	44	17	xv	g	28.16	M	29 M	28 Ian.	14 Feb.	31 M	9 Maij
24	44	18		f							

A . D .	Ep No	D o m .	Mean (C mo)	full (D. H.	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
4									
4 4 2 5	1 xx 8 vj	e	16. 13 A		17 A	16 Feb.	5 Mar.	20 A	29 Maij
4 4 2 6	1 vij 9	d	5. 22 A		6 A	8 Feb.	25 Feb.	12 A	21 Maij
4 4 2 7	1 xix	c	26. 7 M		25 M	24 Ian.	10 Feb.	28 M	6 Maij
4 4 2 8	2 * 4	b A	13. 4 A		13 A	13 Feb.	1 Mar.	16 A	25 Maij
4 4 2 9	3 xj	g	2. 13 A		2 A	4 Feb.	21 Feb.	8 A	17 Maij
4 4 3 0	4 xxi j	f	22. 22 M		22 M	20 Ian.	6 Feb.	24 M	2 Maij
4 4 3 1	5 iij	e	10. 20 A		10 A	9 Feb.	26 Feb.	13 A	22 Maij
4 4 3 2	6 xiii j	d c	30. 4 M		30 M	1 Feb.	18 Feb.	4 A	13 Maij

A . D .	Ep № act	D o m .	Mean (C mo)	full (D. H.	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
4 4 3 3	7 xx v	b	18. 2 A		18 A	20 Feb.	9 Mar.	24 A	2 Iunij
4 4 3 4	8 vj	A	7. 11 A		7 A	5 Feb.	22 Feb.	9 A	18 Maij
4 4 3 5	9 xvi i	g	27. 19 M		27 M	28 Ian.	14 Feb.	1 A	10 Maij
4 4 3 6	1 xx 0 viij	f e	14. 17 A		15 A	17 Feb.	5 Mar.	20 A	29 Maij
4 4 3 7	1 ix 1	d	4. 2 A		4 A	1 Feb.	18 Feb.	5 A	14 Maij
4 4 3 8	1 xx 2	c	24. 11 M		24 M	24 Ian.	10 Feb.	28 M	6 Maij
4 4 3 9	1 j 3	b	12. 8 A		12 A	13 Feb.	2 Mar.	17 A	26 Maij
4 4 4 0	1 xij 4	A g	31. 17 M		1 A	5 Feb.	22 Feb.	8 A	17 Maij
4	1 xxi	f	21. 2 M		21	20 Ian.	6	24	2

A . D .	Ep .	No act	D m .	Mean (C mo)	full (D. H.	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
4 4 1	5 ij					M		Feb.	M	Maij
4 4 1	1 iiij	6	e	8. 23 A		9 A	9 Feb.	26 Feb.	13 A	22 Maij
4 4 2	1 xv	7	d	29. 8 M		29 M	1 Feb.	18 Feb.	5 A	14 Maij
4 4 3	1 xx	8	c	16. 6 A		17 A	21 Feb.	9 Mar.	24 A	2 Iunij
4 4 4	1 vii	9	A	5. 15 A		6 A	5 Feb.	22 Feb.	9 A	18 Maij
4 4 5	1 xix		g	25. 23 M		25 M	28 Ian.	14 Feb.	1 A	10 Maij
4 4 6	2 *		f	13. 21 A		13 A	10 Feb.	27 Feb.	14 A	23 Maij
4 4 7	3 xi		e	2. 6 A		2 A	2 Feb.	19 Feb.	5 A	14 Maij
4 4 8	4 xxi	j	c	22. 15 M		22 M	24 Ian.	10 Feb.	28 M	6 Maij

A . D .	Ep No act		D o m .	Mean ☾ full (D. H. mo)	Lun a 14	Septuag.	Ash Wed .	Ea ste r	Asce nsion
49450445144544555	5	iiij	b	10. 12 A	10 A	13 Feb.	2 Mar.	17 A	26 Maij
4451451445144544555	6	xiii i	A	30. 21 M	30 M	29 Ian.	15 Feb.	2 A	11 Maij
4451451445144544555	7	xx v	g f	17. 18 A	18 A	18 Feb.	6 Mar.	21 A	30 Maij
4451451445144544555	8	vj	e	7. 3 A	7 A	9 Feb.	26 Feb.	13 A	22 Maij
4451451445144544555	9	xvi j	d	17. 12 M	27 M	25 Ian.	11 Feb.	29 M	7 Maij
4451451445144544555	10	xx viij	c	15. 10 A	15 A	14 Feb.	3 Mar.	18 A	27 Maij

Leaf 2 — CAPVT XXII. / MOBILIVM TEMPORARIA. (p. 481),
A.D. 4400–4455 (old calendar)

Columns: A.D. | Pentecost (Pentecoste) | Corpus Christi (Corpus Domini) |
Indiction (Indictio) | Sundays after Pentecost (Dñicæ post Pentecosten) | First
Sunday of Advent (Dominica prima Aduentus) | Dominical letter, old cal. (Literæ
Dominicales Calend. veteris) | Luna 14, old cal. (Lunæ xiiij. Calend. veteris) |

Easter, old cal. (*Pascha Calend. veteris*) | Difference (*Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt*)

A. D.	Pentec ost	Corpu s	In d.	Sun. p.Pent.	Adve nt I	D o m . f e d c b A g f e d	Luna 14	Easter (old)	Di ff.
4 4 0 0	14 Maij	25 Maij	8	28	3 Dec.		4 A	6 A	42
4 4 0 1	3 Iunij	14 Iunij	9	25	2 Dec.		24 M	29 M	14
4 4 0 2	26 Maij	6 Iunij	1 0	26	1 Dec.		12 A	18 A	42
4 4 0 3	11 Maij	22 Maij	1 1	28	30 Nou.		1 A	3 A	42
4 4 0 4	30 Maij	10 Iunij	1 2	25	28 Nou.		21 M	25 M	14
4 4 0 5	22 Maij	2 Iunij	1 3	27	27 Nou.		9 A	14 A	42
4 4 0 6	11 Iunij	22 Iunij	1 4	24	3 Dec.		29 M	30 M	7
4 4 0	27 Maij	7 Iunij	1 5	26	2 Dec.		17 A	19 A	42

A. D.	Pentec ost	Corpu s	In d.	Sun. p.Pent.	Adve nt I	D o m .	Luna 14	Easter (old)	Di ff.
7									
4 4 0 8	18 Maij	29 Maij	1	27	30 Nou.	c b	5 A	10 A	42
4 4 0 9	7 Iunij	18 Iunij	2	24	29 Nou.	A	25 M	26 M	7
4 4 1 0	23 Maij	3 Iunij	3	26	28 Nou.	g	13 A	15 A	42
4 4 1 1	15 Maij	26 Maij	4	27	27 Nou.	f	2 A	7 A	42
4 4 1 2	3 Iunij	14 Iunij	5	25	2 Dec.	e d	22 M	29 M	14
4 4 1 3	19 Maij	30 Maij	6	27	1 Dec.	c	10 A	4 A	35
4 4 1 4	8 Iunij	19 Iunij	7	24	30 Nou.	b	30 M	3 A	14
4 4 1 5	31 Maij	11 Iunij	8	25	29 Nou.	A	18 A	23 A	42

A. D.	Pentec ost	Corpu s	In d.	Sun. p.Pent.	Adve nt I	D o m .	Luna 14	Easter (old)	Di ff.
4 4 1 6	22 Maij	2 Iunij	9	26	27 Nou.	g f	7 A	14 A	42
4 4 1 7	4 Iunij	15 Iunij	1 0	25	3 Dec.	e	27 M	30 M	14
4 4 1 8	27 Maij	7 Iunij	1 1	26	2 Dec.	d	15 A	19 A	42
4 4 1 9	19 Maij	30 Maij	1 2	27	1 Dec.	c	4 A	11 A	42
4 4 2 0	7 Iunij	18 Iunij	1 3	24	29 Nou.	b A	24 M	26 M	7
4 4 2 1	23 Maij	3 Iunij	1 4	26	28 Nou.	g	12 A	15 A	42
4 4 2 2	15 Maij	26 Iunij	1 5	27	27 Nou.	f	1 A	7 A	42
4 4 2 3	4 Iunij	15 Iunij	1	25	3 Dec.	e	21 M	23 M	7
4	19 Maij	30	2	27	1 Dec.	d	9 A	11 A	42

A. D.	Pentec ost	Corpu s	In d.	Sun. p.Pent.	Adve nt I	D o m .	Luna 14	Easter (old)	Di ff.
4 2 4		Maij				c			
4 4 2 5	8 Iunij	19 Iunij	3	24	30 Nou.	b	29 M	3 A	14
4 4 2 6	31 Maij	11 Iunij	4	25	29 Nou.	A	17 A	23 A	42
4 4 2 7	16 Maij	27 Maij	5	27	28 Nou.	g	5 A	8 A	42
4 4 2 8	4 Iunij	15 Iunij	6	25	3 Dec.	f e	25 M	30 M	14
4 4 2 9	27 Maij	7 Iunij	7	26	2 Dec.	d	13 A	19 A	42
4 4 3 0	12 Maij	23 Maij	8	28	1 Dec.	c	2 A	4 A	42
4 4 3 1	1 Iunij	12 Iunij	9	25	30 Nou.	b	22 M	27 M	14
4 4	23 Maij	3 Iunij	1 0	26	28 Nou.	A g	10 A	15 A	42

[illegible]

A. D.	Pentec ost	Corpu s	In d.	Sun. p.Pent.	Adve nt I	D o m .	Luna 14	Easter (old)	Di ff.
0									
4 4 4 1	12 Maij	23 Maij	4	28	1 Dec.	c	1 A	4 A	42
4 4 4 2	1 Iunij	12 Iunij	5	25	30 Nou.	b	21 M	27 M	14
4 4 4 3	24 Maij	4 Iunij	6	26	29 Nou.	A	9 A	16 A	42
4 4 4 4	12 Iunij	23 Iunij	7	23	27 Nou.	g f	29 M	31 M	7
4 4 4 5	28 Maij	8 Iunij	8	26	3 Dec.	e	17 A	20 A	42
4 4 4 6	20 Maij	31 Maij	9	27	2 Dec.	d	5 A	12 A	42
4 4 4 7	2 Iunij	13 Iunij	1 0	25	1 Dec.	c	25 M	28 M	14
4 4 4 8	24 Maij	4 Iunij	1 1	26	29 Nou.	b A	13 A	16 A	42

A. D.	Pentec ost	Corpu s	In d.	Sun. p.Pent.	Adve nt I	D o m .	Luna 14	Easter (old)	Di ff.
4 4 4 9	16 Maij	27 Maij	1 2	27	28 Nou.	g	2 A	8 A	42
4 4 5 0	5 Iunij	16 Iunij	1 3	24	27 Nou.	f	22 M	24 M	7
4 4 5 1	21 Maij	1 Iunij	1 4	27	3 Dec.	e	10 A	13 A	42
4 4 5 2	9 Iunij	20 Iunij	1 5	24	1 Dec.	d c	30 M	4 A	14
4 4 5 3	1 Iunij	12 Iunij	1	25	30 Nou.	b	18 A	24 M [recte: 24 A]	42
4 4 5 4	17 Maij	28 Maij	2	27	29 Nou.	A	7 A	9 A	42
4 4 5 5	6 Iunij	17 Iunij	3	24	28 Nou.	g	27 M	1 A	14

Leaf 3 — CALEND. GREG. / TABVLA FESTORVM (p. 482), A.D. 4456–4511 (Gregorian)

Columns as Leaf 1. Note the **solar-equation epact decrement at the 4500 century boundary** (4500 is a common century year): from A.D. 4500 onward

each golden number's epact and its Luna 14 stand one place lower than before (e.g. golden № 18: epact xxvi before 4500, printed 25 — in Arabic figures — at 4501; golden № 1: xix at 4484, xviiij at 4503). This is a calendrical feature of the table, not a compositor slip.

A			D							
.			o							
D	Ep	m	Mean	☾ full (D. H.	Lun	Sept	Ash		Ascen	
.	№ act	.	mo)		a 14	uag.	Wed.	Easter	sion	
4	1	ix	b	3. 18 A	4 A	6	23	9 A	18	
4	1		A			Feb.	Feb.		Maij	
5										
6										
4	1	xx	g	24. 3 M	24	21	7	25 M	3 Maij	
4	2				M	Ian.	Feb.			
5										
7										
4	1	j	f	12. 1 A	12 A	10	27	14 A	23	
4	3					Feb.	Feb.		Maij	
5										
8										
4	1	xij	e	1. 10 A	1 A	2	19	6 A	15	
4	4					Feb.	Feb.		Maij	
5										
9										
4	1	xxi	d	20. 12 M	21	25	11	28 M	6 Maij	
4	5	ii	c		M	Ian.	Feb.			
6										
0										
4	1	iiij	b	8. 16 A	9 A	6	23	10 A	19	
4	6					Feb.	Feb.		Maij	
6										
1										
4	1	xv	A	29. 1 M	29	29	15	2 A	11	
4	7				M	Ian.	Feb.		Maij	
6										
2										
4	1	xx	g	16. 22 A	17 A	18	7	22 A	31	

A . D .	Ep .	No act	D .	Mean (mo)	☾ full (D. H.)	Lun a 14	Sept uag.	Ash Wed.	Easter	Ascen sion
4 6 3	8	vi					Feb.	Mar.		Maij
4 4 6 4	1 9	vij	f e	5. 7 A		6 A	10 Feb.	27 Feb.	13 A	22 Maij
4 4 6 5	1	xix	d	25. 16 M		25 M	25 Ian.	11 Feb.	29 M	7 Maij
4 4 6 6	2	*	c	13. 13 A		13 A	14 Feb.	3 Mar.	18 A	27 Maij
4 4 6 7	3	xi	b	2. 22 A		2 A	30 Ian.	16 Feb.	3 A	12 Maij
4 4 6 8	4	xxi j	A g	22. 7 M		22 M	22 Ian.	8 Feb.	25 M	3 Maij
4 4 6 9	5	iiij	f	10. 5 A		10 A	10 Feb.	27 Feb.	14 A	23 Maij
4 4 7 0	6	xiii j	e	30. 13 M		30 M	2 Feb.	19 Feb.	6 A	15 Maij
4 4	7	xx v	d	18. 11 A		18 A	15 Feb.	4 Mar.	19 A	28 Maij

A . D .	Ep .	No act	D o m .	Mean (C mo)	full (D. H.	Lun a 14	Sept uag.	Ash Wed.	Easter	Ascen sion
7 1										
4 4 7 2	8 vi		c b	6. 20 A		7 A	7 Feb.	24 Feb.	10 A	19 Maij
4 4 7 3	9 xvi j		A	27. 5 M		27 M	29 Ian.	15 Feb.	2 A	11 Maij
4 4 7 4	1 xx 0 viij		g	15. 2 A		15 A	18 Feb.	7 Mar.	22 A	31 Maij
4 4 7 5	1 ix 1		f	4. 11 A		4 A	3 Feb.	20 Feb.	7 A	16 Maij
4 4 7 6	1 xx 2		e d	23. 20 M		24 M	26 Ian.	12 Feb.	29 M	7 Maij
4 4 7 7	1 j 3		c	11. 17 A		12 A	14 Feb.	3 Mar.	18 A	27 Maij
4 4 7 8	1 xij 4		b	1. 2 A		1 A	30 Ian.	16 Feb.	3 A	12 Maij
4 4 7	1 xxi 5 ij		A	21. 11 M		21 M	22 Ian.	8 Feb.	26 M	4 Maij

A . D .	Ep No	act	D o m .	Mean (C mo)	full (D. H.	Lun a 14	Sept uag.	Ash Wed.	Easter	Ascen sion
9										
4 4 8 0	1 6	iiij f	g f	8. 8 A		9 A	11 Feb.	28 Feb.	14 A	23 Maij
4 4 8 1	1 7	xv	e	28. 17 M		29 M	26 Ian.	12 Feb.	30 M	8 Maij
4 4 8 2	1 8	xx vi	d	16. 15 A		17 A	15 Feb.	4 Mar.	19 A	28 Maij
4 4 8 3	1 9	vij	c	6. 0 A		6 A	7 Feb.	24 Feb.	11 A	20 Maij
4 4 8 4	1	xix	b A	25. 8 M		25 M	23 Ian.	9 Feb.	26 M	4 Maij
4 4 8 5	2	*	g	13. 6 A		13 A	11 Feb.	28 Feb.	15 A	24 Maij
4 4 8 6	3	xj	f	2. 15 A		2 A	3 Feb.	20 Feb.	7 A	16 Maij
4 4 8 7	4 j	xxi j	e	22. 23 M		22 M	19 Ian.	5 Feb.	23 M	1 Maij

A . D .	Ep .	No act	D .	Mean (mo)	© full (D. H.	Lun a 14	Sept uag.	Ash Wed.	Easter	Ascen sion
4 4 8 8	5	iiij	d	9. 21 A		10 A	8 Feb.	25 Feb.	11 A	20 Maij
4 4 8 9	6	xiii j	b	30. 6 M		30 M	30 Ian.	16 Feb.	3 A	12 Maij
4 4 9 0	7	xx v	A	18. 3 A		18 A	19 Feb.	8 Mar.	23 A	1 Iunij
4 4 9 1	8	vj	g	7. 12 A		7 A	4 Feb.	21 Feb.	8 A	17 Maij
4 4 9 2	9	xvi i	f e	26. 21 M		27 M	27 Ian.	13 Feb.	30 M	8 Maij
4 4 9 3	1 0	xx viii	d	14. 19 A		15 A	15 Feb.	4 Mar.	19 A	28 Maij
4 4 9 4	1 1	ix	c	4. 3 A		4 A	7 Feb.	24 Feb.	11 A	20 Maij
4 4 9 5	1 2	xx	b	24. 12 M		24 M	23 Ian.	9 Feb.	27 M	5 Maij
4 4	1	j	A	11. 10 A		12 A	12	29	15 A	24

A . D .	Ep No act	D o m .	Mean (C mo)	full (D. H.)	Lun a 14	Sept uag.	Ash Wed.	Easter	Ascen sion
4 9 6	3	g				Feb.	Feb.		Maij
4 4 9 7	1 xij 4	f	31. 19 M		1 A	3 Feb.	20 Feb.	7 A	16 Maij
4 4 9 8	1 xxi 5 ij	e	21. 3 M		21 M	19 Ian.	5 Feb.	23 M	1 Maij
4 4 9 9	1 iiij 6	d	9. 1 A		9 A	8 Feb.	25 Feb.	12 A	21 Maij
4 5 0 0	1 xiii 7 j	c	30. 10 M		30 M	31 Ian.	17 Feb.	4 A	13 Maij
4 5 0 1	1 25 8	b	17. 7 A		17 A	20 Feb.	9 Mar.	24 M [recte: 24 A]	2 Iunij
4 5 0 2	1 vj 9	A	6. 16 A		7 A	5 Feb.	22 Feb.	9 A	18 Maij
4 5 0 3	1 xvi ij	g	27. 1 M		26 M	28 Ian.	14 Feb.	1 A	10 Maij
4 5	2 xxi x	f e	14. 23 A		11 A	17 Feb.	5 Mar.	20 A	29 Maij

A . D .	Ep No	act	D m .	Mean C (mo)	full (D. H.	Lun a 14	Sept uag.	Ash Wed.	Easter	Ascen sion
04										
4505	3	x	d	3. 7 A		3 A	1 Feb.	18 Feb.	5 A	14 Maij
4506	4	xxi	c	23. 16 M		23 M	24 Ian.	10 Feb.	28 M	6 Maij
4507	5	ij	b	11. 14 A		11 A	13 Feb.	2 Mar.	17 A	26 Maij
4508	6	xij	A g	30. 22 M		31 M	29 Ian.	15 Feb.	1 A	10 Maij
4509	7	xxi ij	f	18. 20 A		18 A	17 Feb.	6 Mar.	21 A	30 Maij
4510	8	v	e	8. 5 A		8 A	9 Feb.	26 Feb.	13 A	22 Maij
4511	9	xvj	d	28. 14 M		28 M	25 Ian.	11 Feb.	29 M	7 Maij

Caput XXII — *Tabula Festorum Mobilium Temporaria* (continued)

Table of the Movable Feasts by period, 1600–5000. Each opening pairs a New-Calendar (Gregorian) leaf (Tabula Festorum, verso) with an Old-Calendar leaf (Mobilium Temporaria, recto). This batch covers A.D. 4456–4567.

Reading conventions for the tables below (all values transcribed cell-by-cell from the leaf, not derived): in the day-plus-letter columns (Luna XIV, Easter) the trailing letter is the month — **A = Aprilis (April)**, **M = Martius (March)** — printed exactly as on the leaf. The mean-full-moon column is given as **Day. Hour Month**. Month abbreviations are transcribed as printed per cell (Feb./Febr., Mar./Mart., Iunij/Iunii); Roman-vs-Arabic epacts and i-/j-terminal sorts are preserved verbatim. * is the epact-30 asterisk. [?] marks an uncertain small-type read. [recte: ...] is used only for the two year-column compositor slips, where the correct year is itself legible on the facing leaf; printed values contradicted by their own feast intervals are transcribed as printed and listed among the editorial anomalies below.

Mobilium Temporaria — Old Calendar (A.D. 4456–4511)

Column headers as printed: **Anni Domini** (A.D.) · **Pentecoste** (Pentecost) · **Corpus Domini** (Corpus Christi) · **Indictio** (Indiction) · **Dñicae post Pentecosten** (Sundays after Pentecost) · **Dominica prima Aduentus** (First Sunday of Advent) · **Litterae Dñicales Calendarij veteris** (Dominical Letters, Old Calendar) · **Lunae xiiij. Calendarij veteris** (Luna XIV, Old Calendar) · **Pascha Calédarij veteris** (Easter, Old Calendar) · **Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt** (Days by which New-Calendar Easter differs from Old-Calendar Easter).

A.D.	Pente cost	Corpus Christi	I n d .	Sun.p.P ent.	Adve nt I	Dom. Lett.	Lun a XIV	Ea ste r	Di ff.
4456	28 Maij	8 Iunij	4	26	3 Dec.	f e	15 A	20 A	42
4457	13 Maij	24 Maij	5	28	2 Dec.	d	4 A	5 A	42
4458	2	13 Iunij	6	25	1	c	24 M	28	14

A.D.	Pentecost	Corpus Christi	Ind .	Sun.p.P ent.	Advent I	Dom. Lett.	Luna XIV	Easter	Difference
	Iunij				Dec.			M	
4459	25 Maij	5 Iunij	7	26	30 Nou.	b	12 A	17 A	42
4460	16 Maij	27 Maij	8	27	28 Nou.	A g	1 A	8 A	42
4461	29 Maij	9 Iunij	9	25	27 Nou.	f	21 M	24 M	14
4462	21 Maij	1 Iunij	10	27	3 Dec.	e	9 A	13 A	42
4463	10 Iunij	21 Iunij	11	24	2 Dec.	d	29 M	5 A	14
4464	1 Iunij	12 Iunij	12	25	30 Nou.	c b	17 A	24 M	42
4465	17 Maij	28 Maij	13	27	29 Nou.	A	5 A	9 A	42
4466	6 Iunij	17 Iunij	14	24	28 Nou.	g	25 M	1 A	14
4467	22 Maij	2 Iunij	15	26	27 Nou.	f	13 A	14 A	42
4468	13 Maij	24 Maij	1	28	2 Dec.	e d	2 A	5 A	42
4469	2 Iunij	13 Iunij	2	25	1 Dec.	c	22 M	28 M	14
4470	25 Maij	5 Iunij	3	26	30 Nou.	b	10 A	17 A	42
4471	7 Iunij	18 Iunij	4	24	29 Nou.	A	30 M	2 A	14
4472	29 Maij	9 Iunij	5	25	27 Nou.	g f	18 A	21 A	42
4473	21 Maij	1 Iunij	6	27	3 Dec.	e	7 A	13 A	42

A.D.	Pentecost	Corpus Christi	In d .	Sun.p.P ent.	Advent I	Dom. Lett.	Luna XIV	Easter	Difference
4474	10 Iunii	21 Iunij	7	24	2 Dec.	d	27 M	29 M	7
4475	26 Maij	6 Iunij	8	26	1 Dec.	c	15 A	18 A	42
4476	17 Maij	28 Maij	9	27	29 Nou.	b A	4 A	9 A	42
4477	6 Iunij	17 Iunij	10	24	28 Nou.	g	24 M	25 M	7
4478	22 Maij	2 Iunij	11	26	27 Nou.	f	12 A	14 A	42
4479	14 Maij	25 Maij	12	28	3 Dec.	e	1 A	6 A	42
4480	2 Iunij	13 Iunij	13	25	1 Dec.	d c	21 M	28 M	14
4481	18 Maij	29 Maij	14	27	30 Nou.	b	9 A	10 A	42
4482	7 Iunij	18 Iunij	15	24	29 Nou.	A	29 M	2 A	14
4483	30 Maij	10 Iunij	1	25	28 Nou.	g	17 A	22 A	42
4484	14 Maij	25 Maij	2	28	3 Dec.	f e	5 A	6 A	42
4485	3 Iunij	14 Iunij	3	25	2 Dec.	d	25 M	29 M	14
4486	26 Maij	6 Iunij	4	26	1 Dec.	c	13 A	18 A	42
4487	11 Maij	22 Maij	5	28	30 Nou.	b	2 A	3 A	42
4488	30 Maij	10 Iunij	6	25	28 Nou.	A g	22 M	25 M	14
4489	22	2 Iunij	7	26	27	f	10 A	14	42

A.D.	Pentecost	Corpus Christi	Ind .	Sun.p.P ent.	Advent I	Dom. Lett.	Luna XIV	Easter	Difference
	Maij				Nou.			A	
4490	11 Iunij	22 Iunij	8	24	3 Dec.	e	30 M	6 A	14
4491	27 Maij	7 Iunij	9	26	2 Dec.	d	18 A	19 A	42
4492	18 Maij	29 Maij	10	27	30 Nou.	c b	7 A	10 A	42
4493	7 Iunij	18 Iunij	11	24	29 Nou.	A	27 M	2 A	14
4494	30 Maij	10 Iunij	12	25	28 Nou.	g	15 A	22 A	42
4495	15 Maij	26 Maij	13	27	27 Nou.	f	4 A	7 A	42
4496	3 Iunij	14 Iunij	14	25	2 Dec.	e d	24 M	29 M	14
4497	26 Maij	6 Iunij	15	26	1 Dec.	c	12 A	18 A	42
4498	11 Maij	22 Maij	1	28	30 Nou.	b	1 A	3 A	42
4499	31 Maij	11 Iunij	2	25	29 Nou.	A	21 M	26 M	14
4500	23 Maij	3 Iunij	3	26	28 Nou.	g f	9 A	14 A	42
4501	12 Iunij	23 Iunij	4	23	27 Nou.	e	29 M	30 M	7
4502	28 Maij	8 Iunij	5	26	3 Dec.	d	17 A	19 A	42
4503	20 Maij	31 Maij	6	27	2 Dec.	c	5 A	11 A	42
4594 [recte: 4504]	8 Iunij	19 Iunij	7	24	30 Nou.	b A	25 M	26 M	7

A.D.	Pentecost	Corpus Christi	In d .	Sun.p.P ent.	Advent I	Dom. Lett.	Luna XIV	Easter	Days
4505	24 Maij	4 Iunij	8	26	29 Nou.	g	13 A	15 A	42
4506	16 Maij	27 Maij	9	27	28 Nou.	f	2 A	7 A	42
4507	5 Iunij	16 Iunij	10	24	27 Nou.	e	22 M	23 M	7
4508	20 Maij	31 Maij	11	27	2 Dec.	d c	10 A	11 A	42
4509	9 Iunij	20 Iunij	12	24	1 Dec.	b	30 M	3 A	14
4510	1 Iunij	12 Iunij	13	25	30 Nou.	A	18 A	23 A	42
4511	17 Maij	28 Maij	14	27	29 Nou.	g	7 A	8 A	42

Calend. Greg. — Tabula Festorum — New Calendar (A.D. 4512–4567)

Column headers as printed: **Anni Domini** (A.D.) · **Aur. Num.** (Golden Number) · **Epactae** (Epacts) · **Litterae Dominicales Caléd. Gregor.** (Dominical Letters, Gregorian) · **Plenilunia media Cal. Gregor.** — **D. H.** (Mean Full Moons, Gregorian — Day, Hour) · **Lunae xiiij. Calendarii Gregoriani** (Luna XIV, Gregorian) · **Septuagesima** · **Dies Cinerum** (Ash Wednesday) · **Pascha Calend. noui** (Easter, New Calendar) · **Ascensio Domini** (Ascension).

A.D.	Golden Number	Epact	Dom. Lett.	Full moon (D.H.mo)	Luna XIV	Septuagesima	Ash Wednesday	Easter	Ascension
4512	10	xxvii	c b	15. 11 A	16 A	14 Febr.	2 Mar	17 A	26 Maij
4513	11	vii i	A	4. 20 A	5 A	5 Febr.	22 Feb	9 A	18 Maij

A.D.	Gol d.N o.	Ep ac t	Dom. Lett.	Full moon (D.H.mo)	Lun a XIV	Septua gesima	Ash We d.	Ea ste r	Asce nsio n
							r.		
4514	12	xi x	g	25. 5 M	25 M	28 Ian.	14 Feb	1 A	10 Maij
							r.		
4515	13	*	f	13. 2 A	13 A	10 Febr.	27 Feb	14 A	23 Maij
							r.		
4616 [recte: 4516]	14	xi	e d	2. 11 A	2 A	2 Febr.	19 Feb	5 A	14 Maij
							r.		
4517	15	xx ii	c	21. 20 M	22 M	24 Ian.	10 Feb	28 M	6 Maij
							r.		
4518	16	iiij	b	9. 18 A	10 A	13 Febr.	2 Mar	17 A	26 Maij
							t.		
4519	17	xii ij	A	30. 2 M	30 M	29 Ian.	15 Feb	2 A	11 Maij
							r.		
4520	18	25	g f	17. 0 A	17 A	18 Febr.	6 Mar	21 A	30 Maij
							t.		
4521	19	vj	e	6. 9 A	7 A	9 Febr.	26 Feb	13 A	22 Maii
							r.		
4522	1	xv iii	d	26. 17 M	26 M	26 Ian.	11 Feb	29 M	7 Maij
							r.		
4523	2	xx ix	c	14. 15 A	14 A	14 Febr.	3 Mar	18 A	27 Maij
							.		
4524	3	x	b A	3. 0 A	3 A	6 Febr.	23 Feb	9 A	18 Maij

A.D.	Gol d.N o.	Ep ac t	Dom. Lett.	Full moon (D.H.mo)	Lun a XIV	Septua gesima	Ash We d.	Ea ste r	Asce nsio n
4525	4	xx i	g	23. 9 M	23 M	21 Febr.	r. 7 Feb	25 M	3 Maij
4526	5	ij	f	11. 6 A	11 A	10 Febr.	r. 27 Feb	14 A	23 Maij
4527	6	xii i	e	31. 15 M	31 M	2 Febr.	r. 19 Feb	6 A	15 Maij
4528	7	xx iiii	d c	18. 13 A	18 A	22 Febr.	r. 10 Mar t.	25 A	3 Iunij
4529	8	v	b	7. 21 A	8 A	6 Febr.	r. 23 Feb	10 A	19 Maij
4530	9	xv i	A	28. 6 M	28 M	29 Ian.	r. 15 Feb	2 A	11 Maij
4531	10	xx vii	g	16. 4 A	16 A	18 Febr.	r. 7 Mar	22 A	31 Maij
4532	11	vii i	f e	4. 13 A	5 A	3 Febr.	. 20 Feb r.	6 A	15 Maij
4533	12	xi x	d	24. 21 M	25 M	25 Ian.	r. 11 Feb	29 M	7 Maij
4534	13	*	c	11. 19 A	13 A	15 Febr.	r. 3 Mar	18 A	27 Maij
4535	14	xi	b	2. 4 A	2 A	30 Ian.	. 16 Feb	3 A	12 Maij

A.D.	Gol d.N o.	Ep ac t	Dom. Lett.	Full moon (D.H.mo)	Lun a XIV	Septua gesima	Ash We d.	Ea ste r	Asce nsio n
							r.		
4536	15	xx ii	A g	21. 13 M	22 M	22 Ian.	8 Feb	25 M	3 Maij
							r.		
4537	16	iii	f	9. 10 A	10 A	10 Ian.	27 Feb	14 A	23 Maij
							r.		
4538	17	xii ii	e	29. 19 M	30 M	2 Febr.	19 Feb	6 A	15 Maij
							r.		
4539	18	25	d	17. 16 A	17 A	15 Febr.	4 Mar	19 A	28 Maij
							t.		
4540	19	vj	c b	6. 1 A	7 A	7 Febr.	24 Feb	10 A	19 Maij
							r.		
4541	1	xv iii	A	26. 10 M	26 M	29 Ian.	15 Feb	2 A	11 Maij
							r.		
4542	2	xx ix	g	14. 8 A	14 A	11 Febr.	28 Feb	15 A	24 Maij
							r.		
4543	3	x	f	3. 16 A	3 A	3 Febr.	20 Feb	7 A	16 Maij
							r.		
4544	4	xx i	e d	23. 1 M	23 M	26 Ian.	12 Feb	29 M	7 Maij
							r.		
4545	5	ij	c	10. 23 A	11 A	14 Febr.	3 Mar	18 A	27 Maij
							.		
4546	6	xii i	b	31. 8 M	31 M	30 Ian.	16 Feb	3 A	12 Maij

A.D.	Gol d.N o.	Ep ac t	Dom. Lett.	Full moon (D.H.mo)	Lun a XIV	Septua gesima	Ash We d.	Ea ste r	Asce nsio n
4547	7	xx iiij	A	19. 5 A	18 A	19 Febr.	r. 8 Mar	23 A	1 Iunij
4548	8	v	g f	7. 14 A	8 A	11 Febr.	. 28 Feb r.	14 A	23 Maij
4549	9	xv i	e	27. 23 M	28 M	26 Ian.	12 Feb r.	30 M	8 Maij
4550	10	xx vii	d	15. 20 A	16 A	15 Febr.	4 Mar t.	19 A	28 Maij
4551	11	vii i	c	5. 5 A	5 A	7 Febr.	24 Feb r.	11 A	20 Maij
4552	12	xi x	b A	24. 14 M	25 M	23 Ian.	9 Feb r.	26 M	4 Maij
4553	13	*	g	12. 11 A	13 A	11 Febr.	28 Feb.	15 A	24 Maij
4554	14	xi	f	1. 20 A	2 A	3 Febr.	20 Feb r.	7 A	16 Maij
4555	15	xx ii	e	22. 5 M	22 M	19 Ian.	5 Feb r.	23 M	1 Maij
4556	16	iiij	d c	9. 3 A	10 A	8 Febr.	25 Feb r.	11 A	20 Maij
4557	17	xii ii	b	29. 11 M	30 M	30 Ian.	16 Feb r.	3 A	12 Maij

A.D.	Gol d.N o.	Ep ac t	Dom. Lett.	Full moon (D.H.mo)	Lun a XIV	Septua gesima	Ash We d.	Ea ste r	Asce nsio n
4558	18	25	A	17. 9 A	17 A	19 Febr.	8 Mar	23 A	1 Iunij
4559	19	vi	g	6. 18 A	7 A	4 Febr.	21 Feb r.	8 A	17 Maij
4560	1	xv iij	f e	26. 3 M	26 M	27 Ian.	13 Feb r.	30 M	8 Maij
4561	2	xx ix	d	14. 0 A	14 A	15 Febr.	4 Mar	19 A	28 Maij
4562	3	x	c	3. 9 A	3 A	31 Ian.	17 Feb r.	4 A	13 Maij
4563	4	xx j	b	23. 18 M	23 M	23 Ian.	9 Feb r.	23 M	5 Maij
4564	5	ii	A g	10. 15 A	11 A	12 Febr.	29 Feb r.	15 A	24 Maij
4565	6	xii i	f	31. 0 M	31 M	3 Febr.	20 Feb r.	7 A	16 Maij
4566	7	xx iiii	e	18. 22 A	18 A	16 Febr.	5 Mar t.	10 A	29 Maij
4567	8	v	d	8. 6 A	8 A	8 Febr.	25 Feb r.	12 A	21 Maij

Mobilium Temporaria — Old Calendar (A.D. 4512–4567)

Column headers as printed (as page 499): **Anni Domini · Pentecoste · Corpus Domini · Indictio · Dñicae post Pentecosten · Dominica prima Aduentus · Literae Dñicales Calendarij veteris · Lunae xiiij. Calendarij veteris · Pascha Calédarij veteris · Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt.**

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
4 5 1 2	5 Iunij	16 Iunij	1 5	24	27 Nou.	f e	27 M	30 M	14
4 5 1 3	28 Maij	8 Iunij	1	26	3 Dec.	d	15 A	19 A	42
4 5 1 4	20 Maij	31 Maij	2	27	2 Dec.	c	4 A	11 A	42
4 5 1 5	2 Iunij	13 Iunij	3	25	1 Dec.	b	24 M	27 M	14
4 5 1 6	24 Maij	4 Iunij	4	26	29 Nou.	A g	12 A	15 A	42
4 5 1 7	16 Maij	27 Maij	5	27	28 Nou.	f	1 A	7 A	42
4 5 1 8	5 Iunij	16 Iunij	6	24	27 Nou.	e	21 M	23 M	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
4 5 1 9	21 Maij	1 Iunij	7	27	3 Dec.	d	9 A	12 A	42
4 5 2 0	9 Iunij	20 Iunij	8	24	1 Dec.	c b	29 M	3 A	14
4 5 2 1	1 Iunij	12 Iunij	9	25	30 Nou.	A	17 A	23 A	42
4 5 2 2	17 Maij	28 Maij	1 0	27	29 Nou.	g	5 A	8 A	42
4 5 2 3	6 Iunij	17 Iunij	1 1	24	28 Nou.	f	25 M	31 M	14
4 5 2 4	28 Maij	8 Iunij	1 2	26	3 Dec.	e d	13 A	19 A	42
4 5 2 5	13 Maij	24 Maij	1 3	28	2 Dec.	c	2 A	4 A	42
4 5 2 6	2 Iunij	13 Iunij	1 4	25	1 Dec.	b	22 M	27 M	14
4 5 2	25 Maij	5 Iunij	1 5	26	30 Nou.	A	10 A	16 A	42

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
7									
4 5 2 8	13 Iunij	24 Iunij	1	23	28 Nou.	g f	30 M	31 M	7
4 5 2 9	29 Maij	9 Iunij	2	25	27 Nou.	e	18 A	20 A	42
4 5 3 0	21 Maij	1 Iunij	3	27	3 Dec.	d	7 A	12 A	42
4 5 3 1	10 Iunij	21 Iunij	4	24	2 Dec.	c	27 M	28 M	7
4 5 3 2	25 Maij	5 Iunij	5	26	30 Nou.	b A	15 A	16 A	42
4 5 3 3	17 Maij	28 Maij	6	27	29 Nou.	g	4 A	8 A	42
4 5 3 4	6 Iunij	17 Iunij	7	24	28 Nou.	f	24 M	31 M	14
4 5 3 5	22 Maij	2 Iunij	8	26	27 Nou.	e	12 A	13 A	42
4 5	13 Maij	24 Maij	9	28	2 Dec.	d c	1 A	4 A	42

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
3 6									
4 5 3 7	2 Iunij	13 Iunij	1 0	25	1 Dec.	b	21 M	27 M	14
4 5 3 8	25 Maij	5 Iunij	1 1	26	30 Nou.	A	9 A	16 A	42
4 5 3 9	7 Iunij	18 Iunij	1 2	24	29 Nou.	g	29 M	1 A	14
4 5 4 0	29 Maij	9 Iunij	1 3	25	27 Nou.	f e	17 A	20 A	42
4 5 4 1	21 Maij	1 Iunij	1 4	27	3 Dec.	d	5 A	12 A	42
4 5 4 2	3 Iunij	14 Iunij	1 5	25	2 Dec.	c	25 [?]	28 M	14
4 5 4 3	26 Maij	6 Iunij	1	26	1 Dec.	b	13 A	17 A	42
4 5 4 4	17 Maij	28 Maij	2	27	29 Nou.	A g	2 A	8 A	42
4	6 Iunij	17 Iunij	3	24	28	f	22 M	24	7

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
5 4 5					Nou.			M	
4 5 4 6	22 Maij	2 Iunij	4	26	27 Nou.	e	10 A	13 A	42
4 5 4 7	11 Iunij	22 Iunij	5	24	3 Dec.	d	30 M	5 A	14
4 5 4 8	2 Iunij	13 Iunij	6	25	1 Dec.	c b	18 A	24 A	42
4 5 4 9	18 Maij	29 Maij	7	27	30 Nou.	A	7 A	9 A	42
4 5 5 0	7 Iunij	18 Iunij	8	24	29 Nou.	g	27 M	1 A	14
4 5 5 1	30 Maij	10 Iunij	9	25	28 Nou.	f	15 A	21 A	42
4 5 5 2	14 Maij	25 Maij	1 0	28	3 Dec.	e d	4 A	5 A	42
4 5 5 3	3 Iunij	14 Iunij	1 1	25	2 Dec.	c	24 M	28 M	14

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
4 5 5 4	26 Maij	6 Iunij	1 2	26	1 Dec.	b	12 A	17 A	42
4 5 5 5	11 Maij	22 Maij	1 3	28	30 Nou.	A	1 A	2 A	42
4 5 5 6	30 Maij	10 Iunij	1 4	25	28 Nou.	g f	21 M	24 M	14
4 5 5 7	22 Maij	2 Iunij	1 5	26	27 Nou.	e	9 A	13 A	42
4 5 5 8	11 Iunij	22 Iunij	1	24	3 Dec.	d	29 M	5 A	14
4 5 5 9	27 Maij	7 Iunij	2	26	2 Dec.	c	17 A	18 A	42
4 5 6 0	18 Maij	29 Maij	3	27	30 Nou.	b A	5 A	9 A	42
4 5 6 1	7 Iunij	18 Iunij	4	24	29 Nou.	g	25 M	1 A	14
4 5 6	23 Maij	3 Iunij	5	26	28 Nou.	f	13 A	14 A	42

A. D.	Pentec ost	Corpus Christi	In d.	Sun.p.Pe nt.	Adve nt I	Dom. Lett.	Luna XIV	East er	Di ff.
2									
4	15 Maij	26 Maii	6	27	27 Nou.	e	2 A	6 A	42
5									
6									
3									
4	3 Iunij	14 Iunij	7	25	2 Dec.	d c	22 M	28 M	14
5									
6									
4									
4	26 Maij	6 Iunij	8	26	1 Dec.	b	10 A	17 A	42
5									
6									
5									
4	8 Iunij	19 Iunij	9	24	30 Nou.	A	30 M	2 A	14
5									
6									
6									
4	31 Maij	11 Iunij	1	25 [?]	29 Nou.	g	18 A	22 A	42
5			0						
6									
7									

Caput XXII — Tabula Festorum Mobilium Temporaria (continued)

Table of the movable feasts for the successive years, 1600–5000, in paired leaves: the new (Gregorian) calendar on the left-hand page, the corresponding old (Julian) calendar and the civil reckoning on the right-hand page. These openings carry the years A.D. 4568–4679.

Legend. In the mean-full-moon, Luna-14, and Easter columns the trailing letter gives the month: **M** = **Martius (March)**, **A** = **Aprilis (April)**. Month abbreviations elsewhere are transcribed as printed (*Ian.*, *Feb.*, *Febr.*, *Mar.*, *Mart.*, *Nou.*, *Dec.*). The mean full moon is given as **day · hour · month**. The epact * is the new-Calendar

sign for epact 30. Roman-vs-Arabic epact figures (e.g. xxv vs 25) and i-/j-terminal sorts are preserved exactly as set.

New-calendar columns (Gregorian) — A.D. 4568–4623

A										
.		E			Lu	Septua	Ash		Asce	
D	Gold	pa	Dom.	Mean full	na	gesim	Wedne	Easter	nsio	
.	en №	ct	letter(s)	moon (d·h·mo)	14	a	sday	(new)	n	
4	9	xv	c b	27 · 15 · M	28	31 Ian.	17	3 A	12	
5		i			M		Febr.		Maij	
6										
8										
4	10	xx	A	15 · 13 · A	16	19	8 Mart.	23 A	1	
5		vi			A	Febr.			Iuni	
6		i							j	
9										
4	11	vi	g	4 · 22 · A	5 A	4 Febr.	21	8 A	17	
5		ii					Febr.		Maij	
7										
0										
4	12	xi	f	25 · 6 · M	25	27 Ian.	13	31 M	9	
5		x			M		Febr.		Maij	
7										
1										
4	13	*	e d	12 · 4 · A	13	16	4 Mart.	19 A	28	
5					A	Febr.			Maij	
7										
2										
4	14	xj	c	1 · 13 · A	2 A	31 Ian.	17	4 A	13	
5							Febr.		Maij	
7										
3										
4	15	xx	b	21 · 22 · M	22	23 Ian.	9 Febr.	27 M	5	
5		ij			M				Maij	
7										
4										
4	16	iiij	A	9 · 19 · A	10	12	1 Mar.	16 A	25	

A . D .	Gold en №	E pa ct	Dom. letter(s)	Mean full moon (d·h·mo)	Lu na 14	Septua gesim a	Ash Wedne sday	Easter (new)	Asce nsio n
5 7 5					A	Febr.			Maij
4 5 7 6	17	xi iii	g f	29 · 4 · M	30 M	28 Ian.	14 Febr.	31 M	9 Maij
4 5 7 7	18	25	e	17 · 2 · A	17 A	16 Febr.	5 Mart.	20 A	29 Maij
4 5 7 8	19	vj	d	6 · 10 · A	7 A	8 Febr.	25 Febr.	12 A	21 Maij
4 5 7 9	1	xv iii	c	26 · 19 · M	26 M	24 Ian.	10 Febr.	28 M	6 Maij
4 5 8 0	2	xx ix	b A	13 · 17 · A	14 A	13 Febr.	1 Mart.	16 A	25 Maij
4 5 8 1	3	x	g	3 · 1 · A	3 A	4 Febr.	21 Febr.	8 A	17 Maij
4 5 8 2	4	xx i	f	23 · 10 · M	23 M	20 Ian.	6 Febr.	24 M	2 Maij
4 5	5	ij	e	11 · 8 · A	11 A	9 Febr.	26 Febr.	13 A	22 Maij

A D .	Gold en №	E pa ct	Dom. letter(s)	Mean full moon (d·h·mo)	Lu na 14	Septua gesim a	Ash Wedne sday	Easter (new)	Asce nsio n
8 3									
4 5 8 4	6	xi ii	d c	30 · 17 · M	31 M	1 Febr.	18 Febr.	4 A	13 Maij
4 5 8 5	7	xx iii i	b	18 · 14 · A	18 A	20 Febr.	9 Mart.	24 A	2 Iuni j
4 5 8 6	8	v	A	7 · 23 · A	8 A	5 Febr.	22 Febr.	9 A	18 Maij
4 5 8 7	9	xv i	g	28 · 8 · M	28 M	28 Ian.	14 Febr.	1 A	10 Maij
4 5 8 8	10	xx vi i	f e	15 · 5 · A	16 A	17 Febr.	5 Mar.	20 A	29 Maij
4 5 8 9	11	vi ii	d	4 · 14 · A	5 A	8 Febr.	25 Febr.	12 A	21 Maij
4 5 9 0	12	xi x	c	24 · 23 · M	25 M	24 Ian.	10 Febr.	28 M	6 Maij
4 5 9	13	*	b	12 · 21 · A	13 A	13 Febr.	2 Mart.	17 A	26 Maij

A . D .	Gold en №	E pa ct	Dom. letter(s)	Mean full moon (d·h·mo)	Lu na 14	Septua gesim a	Ash Wedne sday	Easter (new)	Asce nsio n
1									
4 5 9 2	14	xi	A g	1 · 5 · A	2 A	5 Febr.	22 Febr.	8 A	17 Maij
4 5 9 3	15	xx ii	f	21 · 14 · M	22 M	20 Ian.	6 Febr.	24 M	2 Maij
4 5 9 4	16	iiij	e	9 · 12 · A	10 A	9 Febr.	26 Febr.	13 A	22 Maii
4 5 9 5	17	xi iiij	d	29 · 21 · M	30 M	1 Febr.	18 Febr.	5 A	14 Maij
4 5 9 6	18	25	c b	16 · 18 · A	17 A	21 Febr.	9 Mart.	24 A	2 Iuni j
4 5 9 7	19	vj	A	6 · 3 · A	7 A	5 Febr.	22 Febr.	9 A	18 Maij
4 5 9 8	1	xv iii	g	26 · 12 · M	26 M	28 Ian.	14 Febr.	1 A	10 Maij
4 5 9 9	2	xx ix	f	14 · 9 · A	14 A	17 Febr.	6 Mar.	21 A	30 Maij

A . D .	Gold en №	E pa ct	Dom. letter(s)	Mean full moon (d·h·mo)	Lu na 14	Septua gesim a	Ash Wedne sday	Easter (new)	Asce nsio n
4 6 0 0	3	x	e	4 · 18 · A	3 A	2 Febr.	19 Febr.	6 A	15 Maij
4 6 0 1	4	xx i	d	24 · 3 · M	23 M	25 Ian.	11 Febr.	29 M	7 Maij
4 6 0 2	5	ij	c	12 · 0 · A	11 A	14 Febr.	3 Mar.	18 A	27 Maij
4 6 0 3	6	xi ii	b	1 · 9 · A	31 M	30 Ian.	16 Febr.	3 A	12 Maij
4 6 0 4	7	xx iii i	A g	19 · 7 · A	18 A	19 Febr.	7 Mart.	22 A	31 Maij
4 6 0 5	8	v	f	8 · 16 · A	8 A	10 Febr.	27 Febr.	14 A	23 Maij
4 6 0 6	9	xv i	e	29 · 0 · M	28 M	26 Ian.	12 Febr.	30 M	8 Maij
4 6 0 7	10	xx vi i	d	16 · 22 · A	16 A	15 Febr.	4 Mart.	19 A	28 Maij
4	11	vi	c b	5 · 7 · A	5 A	7 Febr.	24	10 A	19

A . D .	Gold en №	E pa ct	Dom. letter(s)	Mean full moon (d·h·mo)	Lu na 14	Septua gesim a	Ash Wedne sday	Easter (new)	Asce nsio n
6 0 8		ii					Febr.		Maij
4 6 0 9	12	xi x	A	25 · 16 · M	25 M	22 Ian.	8 Febr.	26 M	4 Maij
4 6 1 0	13	* ii	g	13 · 13 · A	13 A	11 Febr.	28 Febr.	15 A	24 Maij
4 6 1 1	14	xi ii	f	2 · 22 · A	2 A	3 Febr.	20 Febr.	7 A	16 Maij
4 6 1 2	15	xx ii	e d	22 · 7 · M	22 M	26 Ian.	12 Febr.	29 M	7 Maij
4 6 1 3	16	iii ii	c	10 · 4 · A	10 A	7 Febr.	24 Febr.	11 A	20 Maij
4 6 1 4	17	xi iii	b	30 · 13 · M	30 M	30 Ian.	16 Febr.	3 A	12 Maij
4 6 1 5	18	25 vi	A	18 · 11 · A	17 A	19 Febr.	8 Mart.	23 A	1 Iuni j
4 6	19	vj vii	g f	6 · 19 · A	7 A	11 Febr.	28 Febr.	14 A	23 Maij

A D .	Gold en №	E pa ct	Dom. letter(s)	Mean full moon (d·h·mo)	Lu na 14	Septua gesim a	Ash Wedne sday	Easter (new)	Asce nsio n
1 6									
4 6 1 7	1	xv iii	e	27 · 4 · M	26 M	26 Ian.	12 Febr.	30 M	8 Maij
4 6 1 8	2	xx ix	d	15 · 2 · A	14 A	15 Febr.	4 Mart.	19 A	28 Maij
4 6 1 9	3	x	c	4 · 11 · A	3 A	31 Ian.	17 Febr.	4 A	13 Maij
4 6 2 0	4	xx i	b A	23 · 19 · M	23 M	23 Ian.	9 Febr.	26 M	4 Maij
4 6 2 1	5	ii	g	11 · 17 · A	11 A	11 Febr.	28 Febr.	15 A	24 Maij
4 6 2 2	6	xi ii	f	1 · 2 · A	31 M	3 Febr.	20 Febr.	7 A	16 Maij
4 6 2 3	7	xx iii i	e	19 · 23 · A	18 A	16 Febr.	5 Mart.	20 A	29 Maij

Old-calendar and civil columns — A.D. 4568–4623

Last column heading in full: **Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt** — "The number of days by which the Easter of the new Calendar differs from the Easter of the old Calendar." (Both Easters are Sundays, so the figure is always a multiple of 7.)

A.D.	Pe nt ec ost	Corpus Christi	In di cti on	Sundays after Pentecost	First Sunday of Advent	Dom. letter(s), old	Lun a 14, old	Eas ter, old	D i ff f .
4568	22 M aij	2 Iunij	11	26	27 Nou.	f e	7 A	13 A	4 2
4569	11 Iu nii	22 Iunij	12	24	3 Dec.	d	27 M	29 M	7
4570	27 M aij	7 Iunij	13	26	2 Dec.	c	15 A	18 A	4 2
4571	19 M aij	30 Maij	14	27	1 Dec.	b	4 A	10 A	4 2
4572	7 Iu nij	18 Iunij	15	24	29 Nou.	A g	24 M	25 M	7
4573	23 M aij	3 Iunij	1	26	28 Nou.	f	12 A	14 A	4 2
4574	15 M aij	26 Maij	2	27	27 Nou.	e	1 A	6 A	4 2
4575	4 Iu nij	15 Iunij	3	25	3 Dec.	d	21 M	22 M	7
4576	19 M	30 Maij	4	27	1 Dec.	c b	9 A	10	4

A.D.	Pentecost	Corpus Christi	Indiction	Sundays after Pentecost	First Sunday of Advent	Dom. letter(s), old	Luna 14, old	Easter, old	Difference
	aij							A	2
4577	8 Iunij	19 Iunij	5	24	30 Nou.	A	29 M	2 A	14
4578	31 M aij	11 Iunij	6	25	29 Nou.	g	17 A	22 A	42
4579	16 M aij	27 Maij	7	27	28 Nou.	f	5 A	7 A	42
4580	4 Iunij	15 Iunij	8	25	3 Dec.	e d	25 M	29 M	14
4581	27 M aij	7 Iunij	9	26	2 Dec.	c	13 A	18 A	42
4582	12 M aij	23 Maij	10	28	1 Dec.	b	2 A	3 A	42
4583	1 Iunij	12 Iunij	11	25	30 Nou.	A	22 M	26 M	14
4584	23 M aij	3 Iunij	12	26	28 Nou.	g f	10 A	14 A	42
4585	12 Iunij	23 Iunij	13	23	27 Nou.	e	30 M	6 A	14
4586	28 M aij	8 Iunij	14	26	3 Dec.	d	18 A	19 A	42

A.D.	Pentecost	Corpus Christi	Indiction	Sundays after Pentecost	First Sunday of Advent	Dom. letter(s), old	Luna 14, old	Easter, old	Difference
4587	20 M aij	31 Maij	15	27	2 Dec.	c	7 A	11 A	42
4588	8 Iu nij	19 Iunij	1	24	30 Nou.	b A	27 M	2 A	14
4589	31 M aij	11 Iunij	2	25	29 Nou.	g	15 A	22 A	42
4590	16 M aij	27 Maij	3	27	28 Nou.	f	4 A	7 A	42
4591	5 Iu nij	16 Iunij	4	24	27 Nou.	e	24 M	30 M	14
4592	27 M aij	7 Iunij	5	26	2 Dec.	d c	12 A	18 A	42
4593	12 M aij	23 Iunij [recte: 23 Maij]	6	28	1 Dec.	b	1 A	3 A	42
4594	1 Iu nij	12 Iunij	7	25	30 Nou.	A	21 M	26 M	14
4595	24 M aij	4 Iunij	8	26	29 Nou.	g	9 A	15 A	42
4596	12 Iu nij	23 Iunij	9	23	27 Nou.	f e	29 M	30 M	7
4597	28 M	8 Iunij	10	26	3 Dec.	d	17 A	19	4

A.D.	Pe nt ec ost	Corpus Christi	In di cti on	Sundays after Pentecost	First Sunday of Advent	Dom. letter(s), old	Lun a 14, old	Eas ter, old	D i ff f .
	aij							A	2
4598	20 M aij	31 Maij	11	27	2 Dec.	c	5 A	11 A	4 2
4599	9 Iu nij	20 Iunij	12	24	1 Dec.	b	25 M	27 M	7
4600	25 M aij	5 Iunij	13	26	30 Nou.	A g	13 A	15 A	4 2
4601	17 M aij	28 Maij	14	27	29 Nou.	f	2 A	7 A	4 2
4602	6 Iu nij	17 Iunij	15	24	28 Nou.	e	22 M	23 M	7
4603	22 M aij	2 Iunij	1	26	27 Nou.	d	10 A	12 A	4 2
4694 [recte: 4604]	10 Iu nij	21 Iunij	2	24	2 Dec.	c b	30 M	3 A	1 4
4605	2 Iu nij	13 Iunij	3	25	1 Dec.	A	18 A	23 A	4 2
4606	18 M aij	29 Maij	4	27	30 Nou.	g	7 A	8 A	4 2
4607	7 Iu nij	18 Iunij	5	24	29 Nou.	f	27 M	31 M	1 4

A.D.	Pentecost	Corpus Christi	Indiction	Sundays after Pentecost	First Sunday of Advent	Dom. letter(s), old	Luna 14, old	Easter, old	Difference
4708 [recte: 4608]	29 M aij	9 Iunij	6	25	27 Nou.	e d	15 A	19 A	4 2
4609	14 M aij	25 Maij	7	28	3 Dec.	c	4 A	11 A	4 9
4610	3 Iu nij	14 Iunij	8	25	2 Dec.	b	24 M	27 M	1 4
4611	26 M aij	6 Iunij	9	26	1 Dec.	A	12 A	16 A	4 2
4612	17 M aij	28 Maij	10	27	29 Nou.	g f	1 A	7 A	4 2
4613	30 M aij	10 Iunij	11	25	28 Nou.	e	21 M	23 M	1 4
4614	22 M aij	2 Iunij	12	26	27 Nou.	d	9 A	12 A	4 2
4615	11 Iu nij	22 Iunij	13	24	3 Dec.	c	29 M	4 A	1 4
4616	2 Iu nij	13 Iunij	14	25	1 Dec.	b A	17 A	23 A	4 2
4617	18 M aij	29 Maij	15	27	30 Nou.	g	5 A	8 A	4 2
4618	7 Iu	18 Iunij	1	24	29 Nou.	f	25	31	1

A.D.	Pentecost	Corpus Christi	Indiction	Sundays after Pentecost	First Sunday of Advent	Dom. letter(s), old	Luna 14, old	Easter, old	Difference
	nij						M	M	4
4619	23 M aij	3 Iunij	2	26	28 Nou.	e	13 A	20 A	4 9
4620	14 M aij	25 Maij	3	28	3 Dec.	d c	2 A	4 A	4 2
4621	3 Iu nij	14 Iunij	4	25	2 Dec.	b	22 M	27 M	1 4
4622	26 M aij	6 Iunij	5	26	1 Dec.	A	10 A	16 A	4 2
4623	8 Iu nij	19 Iunij	6	24	30 Nou.	g	30 M	1 A	1 4

New-calendar columns (Gregorian) — A.D. 4624–4679

A.D.	Golden No	Epa ct	Dom. letter (s)	Mean full moon (d·h·mo)	Luna 14	Septuage sima	Ash Wednesday	Easter (new)	Ascension
4624	8	v	d c	8 · 8 · A	8 A	8 Feb.	25 Feb.	11 A	20 Maij
4625	9	xvj	b	28 · 17 · M	28 M	30 Ian.	16 Feb.	3 A	12 Maij
4626	10	xxv ij	A	16 · 14 · A	16 A	19 Feb.	8 Mar.	23 A	1 Iunij

A.D.	Gol den №	Epa ct	Dom. letter (s)	Mean full moon (d·h·mo)	L u n a 1 4	Sept uage sima	Ash Wed nesday	East er (ne w)	Ascension
4627	11	viiij	g	5 · 23 · A	5 A	4 Feb.	21 Feb.	8 A	17 Maij
4628	12	xix	f e	25 · 8 · M	2 5 M	27 Ian.	13 Feb.	30 M	8 Maij
4629	13	*	d	13 · 6 · A	1 3 A	15 Feb.	4 Mar.	19 A	28 Maij
4630	14	xi	c	2 · 14 · A	2 A	31 Ian.	17 Feb.	4 A	13 Maij
4631	15	xxij	b	22 · 23 · M	2 2 M	23 Ian.	9 Feb.	27 M	5 Maij
4632	16	iiij	A g	9 · 21 · A	1 0 A	12 Feb.	29 Feb.	15 A	24 Maij
4633	17	xiii j	f	30 · 6 · M	3 0 M	27 Ian.	13 Feb.	31 M	9 Maij
4634	18	25	e	18 · 3 · A	1 7 A	16 Feb.	5 Mar.	20 A	29 Maij
4635	19	vi	d	7 · 12 · A	7 A	8 Feb.	25 Feb.	12 A	21 Maij
4636	1	xvii j	c b	26 · 21 · M	2 6 M	24 Ian.	10 Feb.	27 M	5 Maij
4637	2	xxi x	A	14 · 18 · A	1 4 A	12 Feb.	1 Mar.	16 A	25 Maij

A.D.	Gol den №	Epa ct	Dom. letter (s)	Mean full moon (d·h·mo)	L u n a 1 4	Sept uage sima	Ash Wed nesd ay	East er (ne w)	Ascension
4638	3	x	g	4 · 3 · A	3 A	4 Feb.	21 Feb.	8 A	17 Maij
4639	4	xxj	f	24 · 12 · M	2 3 M	20 Ian.	6 Feb.	24 M	2 Maij
4640	5	ij	e d	11 · 9 · A	1 1 A	9 Feb.	26 Feb.	12 A	21 Maij
4641	6	xiiij	c	31 · 18 · M	3 1 M	31 Ian.	17 Feb.	4 A	13 Maij
4642	7	xxii ij	b	19 · 16 · A	1 8 A	20 Feb.	9 Mar.	24 A	2 Iunij
4643	8	v	A	9 · 1 · A	8 A	5 Feb.	22 Feb.	9 A	18 Maij
4644	9	xvj	g f	28 · 9 · M	2 8 M	28 Ian.	14 Feb.	31 M	9 Maij
4645	10	xxv ij	e	16 · 7 · A	1 6 A	16 Feb.	5 Mar.	20 A	29 Maij
4646	11	viiij	d	5 · 16 · A	5 A	8 Feb.	25 Feb.	12 A	21 Maij
4647	12	xix	c	26 · 1 · M	2 5 M	24 Ian.	10 Feb.	28 M	6 Maij
4648	13	*	b A	12 · 22 · A	1 3 A	13 Feb.	1 Mar.	16 A	25 Maij

A.D.	Gol den №	Epa ct	Dom. letter (s)	Mean full moon (d·h·mo)	L u n a 1 4	Sept uage sima	Ash Wed nesd ay	East er (ne w)	Ascension
4649	14	xj	g	2 · 7 · A	2 A	4 Feb.	21 Feb.	8 A	17 Maij
4650	15	xxii	f	22 · 16 · M	2 2 M	20 Ian.	6 Feb.	24 M	2 Maij
4651	16	ijj	e	10 · 13 · A	1 0 A	9 Feb.	26 Feb.	13 A	22 Maij
4652	17	xiii j	d c	29 · 22 · M	3 0 M	1 Feb.	18 Feb.	4 A	13 Maij
4653	18	25	b	17 · 20 · A	1 7 A	20 Feb.	9 Mar.	24 A	2 Iunij
4654	19	vj	A	7 · 4 · A	7 A	5 Feb.	22 Feb.	9 A	18 Maij
4655	1	xvii i	g	27 · 13 · M	2 6 M	28 Ian.	14 Feb.	1 A	10 Maij
4656	2	xxi x	f e	14 · 11 · A	1 4 A	17 Feb.	5 Mar.	20 A	29 Maij
4657	3	x	d	3 · 20 · A	3 A	1 Feb.	18 Feb.	5 A	14 Maij
4658	4	xxi	c	24 · 4 · M	2 3 M	24 Ian.	10 Feb.	28 M	6 Maij
4659	5	ij	b	12 · 2 · A	1 1 A	13 Feb.	2 Mar.	17 A	26 Maij

A.D.	Gol den №	Epa ct	Dom. letter (s)	Mean full moon (d·h·mo)	L u n a 1 4	Sept uage sima	Ash Wed nesd ay	East er (ne w)	Ascension
4660	6	xiiij	A g	31 · 11 · M	3 1 M	29 Ian.	15 Feb.	1 A	10 Maij
4661	7	xxii ij	f	19 · 8 · A	1 8 A	17 Feb.	6 Mar.	21 A	30 Maij
4662	8	v	e	8 · 17 · A	8 A	9 Feb.	26 Feb.	13 A	22 Maij
4663	9	xvj	d	29 · 2 · M	2 8 M	25 Ian.	11 Feb.	29 M	7 Maij
4664	10	xxv iii [?]	c b	16 · 0 · A	1 6 A	14 Feb.	2 Mar.	17 A	26 Maij
4665	11	viiij	A	5 · 8 · A	5 A	5 Feb.	22 Feb.	9 A	18 Maij
4666	12	xix	g	25 · 17 · M	2 5 M	28 Ian.	14 Feb.	1 A	10 Maij
4567 [recte: 4667]	13	*	f	13 · 15 · A	1 3 A	10 Feb.	27 Feb.	14 A	23 Maij
4668	14	xj	e d	2 · 0 · A	2 A	2 Feb.	19 Feb.	5 A	14 Maij
4669	15	xxij	c	22 · 8 · M	2 2 M	24 Ian.	10 Feb.	28 M	6 Maij
4670	16	iiij	b	10 · 6 · A	1 0 A	13 Feb.	2 Mar.	17 A	26 Maij

A.D.	Gol den №	Epa ct	Dom. letter (s)	Mean full moon (d·h·mo)	L u n a 1 4	Sept uage sima	Ash Wed nesd ay	East er (ne w)	Ascension
4671	17	xiii j	A	30 · 15 · M	3 0 M	29 Ian.	15 Feb.	2 A	11 Maij
4672	18	25	g f	17 · 12 · A	1 7 A	18 Feb.	6 Mar.	21 A	30 Maij
4673	19	vj	e	6 · 21 · A	7 A	9 Feb.	26 Feb.	13 A	22 Maij
4674	1	xvii j	d	27 · 6 · M	2 6 M	25 Ian.	11 Feb.	29 M	7 Maij
4675	2	xxi x	c	15 · 3 · A	1 4 A	14 Febr .	3 Mar.	18 A	27 Maij
4676	3	x	b A	3 · 12 · A	3 A	6 Feb.	23 Feb.	9 A	18 Maij
4677	4	xxi	g	23 · 21 · M	2 3 M	21 Ian.	7 Feb.	25 M	3 Maij
4678	5	ij	f	11 · 19 · A	1 1 A	10 Feb.	27 Feb.	14 A	23 Maij
4679	6	xiiij	e	1 · 3 · A	3 1 M	2 Feb.	19 Feb.	6 A	15 Iunij [?, recte 15 Maij]

CAPUT XXII — Table of the Movable Feasts,
arranged by period (continued)

Tabula Festorum Mobilium Temporaria, A.D. 1600–5000. The table is set across facing leaves: each **new-calendar (Gregorian) leaf** (running head *CALEND. GREG.* — *TABVLA FESTORVM*) is paired with an **old-calendar leaf** (*veteris*; running head *CAPVT XXII — MOBILIVM TEMPORARIA*). This opening carries the old-calendar leaf for A.D. 4624–4679 (folio 489), then the paired new- and old-calendar leaves for A.D. 4680–4735 (folios 490–491).

All calendar cells are transcribed verbatim as printed. Latin month abbreviations (*Maij* / *Iunij* / *Nou.* / *Dec.* / *Ian.* / *Febr.* / *Mart.*) and the single-letter Easter/Luna markers (**A** = April, **M** = March) are kept exactly as in the source, including spelling variants (*Maii*, *Iunii*, *Deç.*, *Feb.*, *Mar.*) and the i-/j-terminal and Roman/Arabic distinctions. [recte: ...] marks a legibly corrupt cell whose correct reading is recoverable; [?] marks a genuinely uncertain glyph.

Old-calendar leaf — A.D. 4624–4679 (folio 489)

Running head: **CAPVT XXII / MOBILIVM TEMPORARIA**. Columns as printed:
Anni Domini · Pentecoste · Corpus Domini · Indictio · Dominicæ post Pentecosten ·
Dominica prima Aduentus · Literæ Dominicales Calendarij veteris · Lunæ xiiij.
Calendarij veteris · Pascha Calendarij veteris · Dies quibus Pascha Calendarij noui à
Paschate Calendarij veteris differt.

A . D .	Pentecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
4 6 2 4	30 Maij	10 Iunij	7	25	28 Nou.	f e	18 A	20 A	4 2
4 6 2 5	22 Maij	2 Iunij	8	26	27 Nou.	d	7 A	12 A	4 2
4 6	11 Iunij	22 Iunij	9	24	3 Dec.	c	27 M	28 M	7

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
2 6									
4 6 2 7	27 Maij	7 Iunij	10	26	2 Dec.	b	15 A	17 A	4 2
4 6 2 8	18 Maij	29 Maij	11	27	30 Nou.	A g	4 A	8 A	4 2
4 6 2 9	7 Iunij	18 Iunij	12	24	29 Nou.	f	24 M	31 M	1 4
4 6 3 0	23 Maij	3 Iunij	13	26	28 Nou.	e	12 A	13 A	4 2
4 6 3 1	15 Maij	26 Maij	14	27	27 Nou.	d	1 A	5 A	4 2
4 6 3 2	3 Iunij	14 Iunij	15	25	2 Dec.	c b	21 M	27 M	1 4
4 6 3 3	19 Maij	30 Maij	1	27	1 Dec.	A	9 A	16 A	4 9
4 6 3	8 Iunij	19 Iunij	2	24	30 Nou.	g	29 M	1 A	1 4

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
4									
4 6 3 5	31 Maij	11 Iunij	3	25	29 Nou.	f	17 A	21 A	4 2
4 6 3 6	15 Maij	26 Maij	4	27	27 Nou.	e d	5 A	12 A	4 9
4 6 3 7	4 Iunij	15 Iunij	5	25	3 Dec.	c	25 M	28 M	1 4
4 6 3 8	27 Maij	7 Iunij	6	26	2 Dec.	b	13 A	17 A	4 2
4 6 3 9	12 Maij	23 Maij	7	28	1 Dec.	A	2 A	9 A	4 9
4 6 4 0	31 Maij	11 Iunij	8	25	29 Nou.	g f	22 M	24 M	1 4
4 6 4 1	23 Maij	3 Iunij	9	26	28 Nou.	e	10 A	13 A	4 2
4 6 4 2	12 Iunij	23 Iunij	10	23	27 Nou.	d	30 M	5 A	1 4

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
4 6 4 3	28 Maij	8 Iunij	11	26	3 Dec.	c	18 A	25 A	4 9
4 6 4 4	19 Maij	30 Maij	12	27	1 Dec.	b A	7 A	9 A	4 2
4 6 4 5	8 Iunij	19 Iunij	13	24	30 Nou.	g	27 M	1 A	1 4
4 6 4 6	31 Maij	11 Iunij	14	25	29 Nou.	f	15 A	21 A	4 2
4 6 4 7	16 Maij	27 Maij	15	27	28 Nou.	e	4 A	6 A	4 2
4 6 4 8	4 Iunij	15 Iunij	1	25	3 Dec.	d c	24 M	28 M	1 4
4 6 4 9	27 Maij	7 Iunij	2	26	2 Dec.	b	12 A	17 A	4 2
4 6 5 0	12 Maij	23 Maij	3	28	1 Dec.	A	1 A	2 A	4 2
4	1	12 Iunij	4	25	30	g	21 M	25 M	1

A . . .	Pentecos . t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
6 5 1	Iunij				Nou.				4
4 6 5 2	23 Maij	3 Iunij	5	26	28 Nou.	f e	9 A	13 A	4 2
4 6 5 3	12 Iunij	23 Iunij	6	23	27 Nou.	d	29 M	5 A	1 4
4 6 5 4	28 Maij	8 Iunij	7	26	3 Dec.	c	17 A	18 A	4 2
4 6 5 5	20 Maij	31 Maij	8	27	2 Dec.	b	5 A	10 A	4 2
4 6 5 6	8 Iunij	19 Iunij	9	24	30 Nou.	A g	25 M	1 A	1 4
4 6 5 7	24 Maij	4 Iunij	10	26	29 Nou.	f	13 A	14 A	4 2
4 6 5 8	16 Maij	27 Maij	11	27	28 Nou.	e	2 A	6 A	4 2
4 6	5 Iunij	16 Iunij	12	24	27 Nou.	d	22 M	29 M	1 4

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
5 9									
4 6 6 0	20 Maij	31 Maij	13	27	2 Dec.	c b	10 A	17 A	4 9
4 6 6 1	9 Iunij	20 Iunij	14	24	1 Dec.	A	30 M	2 A	1 4
4 6 6 2	1 Iunij	12 Iunij	15	25	30 Nou.	g	18 A	22 A	4 2
4 6 6 3	17 Maij	28 Maij	1	27	29 Nou.	f	7 A	14 A	4 9
4 6 6 4	5 Iunij	16 Iunij	2	24	27 Nou.	e d	27 M	29 M	1 4
4 6 6 5	28 Maij	8 Iunij	3	26	3 Dec.	c	15 A	18 A	4 2
4 6 6 6	20 Maij	31 Maij	4	27	2 Dec.	b	4 A	10 A	4 2
4 6 6 6	2 Iunij	13 Iunij	5	25	1 Dec.	A	24 M	26 M	1 4

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
7									
4 6 6 8	24 Maij	4 Iunij	6	26	29 Nou.	g f	12 A	14 A	4 2
4 6 6 9	16 Maij	27 Maij	7	27	28 Nou.	e	1 A	6 A	4 2
4 6 7 0	5 Iunij	16 Iunij	8	24	27 Nou.	d	21 M	22 M	7
4 6 7 1	21 Maij	1 Iunij	9	27	3 Dec.	c	9 A	11 A	4 2
4 6 7 2	9 Iunij	20 Iunij	10	24	1 Dec.	b A	29 M	2 A	1 4
4 6 7 3	1 Iunij	12 Iunij	11	25	30 Nou.	g	17 A	22 A	4 2
4 6 7 4	17 Maij	28 Maij	12	27	29 Nou.	f	5 A	7 A	4 2
4 6 7 5	6 Iunij	17 Iunij	13	24	28 Nou.	e	25 M	30 M	1 4

A	Pent				Adve				D
D	ecos	Corpus	Ind	Sun. aft.	nt	Dom.	Luna	Easter	i
.	t	Christi	ict.	Pent.	Sun.	letters (old)	14 (old)	(old)	ff
4	28	8 Iunij	14	26	3 Dec.	d c	13 A	18 A	4
6	Maij								2
7									
6									
4	13	24 Maij	15	28	2 Dec.	b	2 A	3 A	4
6	Maij								2
7									
7									
4	2	13 Iunij	1	25	1 Dec.	A	22 M	26 M	1
6	Iunij								4
7									
8									
4	25	5 Iunij	2	26	30	g	10 A	15 A	4
6	Maij				Nou.				2
7									
9									

New-calendar (Gregorian) leaf — A.D. 4680–4735 (folio 490)

Running head: **CALEND. GREG. / TABVLA FESTORVM**. Columns as printed: *Anni Domini · Aureus Numerus · Epactæ · Literæ Dominicales Calendarij Gregoriani · Plenilunia media Calendarij Gregoriani (D. · H. · month) · Lunæ xiiij. Calendarii Gregoriani · Septuagesima · Dies Cinerum · Pascha Calendarij noui · Ascensio Domini*.

In the "Mean full moon" group, **D** = day, **H** = hour, **mo** = the month marker (A = April, M = March). As noted throughout these leaves, the small-type **H (hour) sub-column** sits at the limit of what the scan resolves; its figures are reading-grade, not citation-grade.

A.D.	Gold	Ep	Dom.	Full	Lu	Septua	Ash	Easter	Asce
.	No.	ac	letters	moon	na	gesima	We	(new)	nsio
.		t		D	14		d.		n
4680	7	xx	d c	19	18	22	10	25 A	3
		iii			A	Febr.	Mar		Iunij

A.D.	Gold . No.	Ep ac t	Dom. letters	Full moon D	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
		i					t.		
4681	8	v	b	8	8 A	6 Febr.	23 Feb r.	10 A	19 Maij
4682	9	xv i	A	28	28 M	29 Ian.	15 Feb r.	2 A	11 Maij
4683	10	xx vii	g	16	16 A	18 Febr.	7 Mar	22 A	31 Maij
4684	11	vii i	f e	5	5 A	3 Febr.	20 Feb r.	6 A	15 Maij
4685	12	xi x	d	25	25 M	25 Ian.	11 Feb r.	29 M	7 Maij
4686	13	*	c	13	13 A	14 Febr.	3 Mar	18 A	27 Maij
4687	14	xi	b	2	2 A	30 Ian.	16 Feb r.	3 A	12 Maij
4688	15	xx ii	A g	22	22 M	22 Ian.	8 Mar	25 M	3 Maij
4689	16	iiij	f	9	10 A	10 Febr.	27 Feb r.	14 A	23 Maij
4690	17	xii ij	e	30	30 M	2 Febr.	19 Feb r.	6 A	15 Maij
4691	18	25	d	18	17 A	15 Febr.	4 Mar	19 A	28 Maij

A.D.	Gold . No.	Ep ac t	Dom. letters	Full moon D	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
							t.		
4692	19	vj	c b	6	7 A	7 Febr.	24 Feb r.	10 A	19 Maij
4693	1	xv iii	A	26	26 M	29 Ian.	15 Feb r.	2 A	11 Maij
4694	2	xx ix	g	14	14 A	11 Febr.	28 Feb r.	15 A	24 Maij
4695	3	x	f	4	3 A	3 Febr.	20 Feb r.	7 A	16 Maij
4696	4	xx i	e d	23	23 M	26 Ian.	12 Feb r.	29 M	7 Maij
4697	5	ij	c	11	11 A	14 Febr.	3 Mar	18 A	27 Maij
4698	6	xii i	b	31	31 M	30 Ian.	16 Feb r.	3 A	12 Maij
4699	7	xx iii i	A	19	18 A	19 Febr.	8 Mar	23 A	1 Iunij
4700	8	iiiij	g	10	9 A	11 Febr.	28 Feb r.	15 A	24 Maij
4701	9	xv	f	29	29 M	27 Ian.	13 Feb r.	31 M	9 Maij
4702	10	xx vi	e	17	17 A	17 Febr.	5 Mar	20 A	29 Maij

A.D.	Gold . No.	Ep ac t	Dom. letters	Full moon D	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
4703	11	vii	d	6	6 A	8 Febr.	. 25 Feb r.	12 A	21 Maij
4704	12	xv iii	c b	26	26 M	24 Ian.	10 Feb r.	27 M	5 Maij
4705	13	xx ix	A	14	14 A	12 Febr.	1 Mar t.	16 A	25 Maij
4706	14	x	g	3	3 A	4 Febr.	21 Feb r.	8 A	17 Maij
4707	15	xx i	f	23	23 M	20 Ian.	6 Feb r.	24 M	2 Maij
4708	16	ii	e d	10	11 A	9 Febr.	26 Feb	12 A	21 Maij
4709	17	xii i	c	31	31 M	29 Ian.	. 17 Feb r.	4 A	13 Maij
4710	18	xx iii i	b	18	18 A	20 Febr.	9 Mar t.	24 A	2 Iunij
4711	19	v	A	8	8 A	5 Febr.	22 Feb r.	9 A	18 Maij
4712	1	xv ii	g f	27	27 M	28 Ian.	14 Feb r.	31 M	9 Maij
4713	2	xx vii	e	15	15 A	16 Febr.	5 Mar	20 A	29 Maij

A.D.	Gold . No.	Ep ac t	Dom. letters	Full moon D	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
		j					.		
4714	3	ix	d	4	4 A	1 Febr.	18 Feb r.	5 A	14 Maij
4715	4	xx	c	25	24 M	24 Ian.	10 Feb r.	28 M	6 Maij
4716	5	j	b A	12	12 A	13 Febr.	1 Mar t.	16 A	25 Maij
4717	6	xij	g	1	1 A	4 Febr.	21 Feb r.	8 A	17 Maij
4718	7	xx iii	f	21	21 M	20 Ian.	6 Feb r.	24 M	2 Maij
4719	8	iiij	e	9	9 A	9 Febr.	26 Feb r.	13 A	22 Maij
4720	9	xv	d c	29	29 M	1 Febr.	18 Feb r.	4 A	13 Maij
4721	10	xx vi	b	17	17 A	20 Febr.	9 Mar t.	24 A	2 Iunij
4722	11	vii	A	6	6 A	5 Febr.	22 Feb r.	9 A	18 Maij
4723	12	xv iii	g	26	26 M	28 Ian.	14 Feb r.	1 A	10 Maij
4724	13	xx ix	f e	13	14 A	17 Febr.	5 Mar	20 A	29 Maij

A.D.	Gold . No.	Ep ac t	Dom. letters	Full moon D	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
4725	14	x	d	3	3 A	1 Febr.	t. 18 Feb r.	5 A	14 Maij
4726	15	xx i	c	23	23 M	24 Ian.	10 Feb r.	28 M	6 Maij
4727	16	ij	b	11	11 A	13 Febr.	2 Mar t.	17 A	26 Maij
4728	17	xii i	A g	30	31 M	29 Ian.	15 Feb r.	1 A	10 Maij
4629 [recte: 4729]	18	xx iiiij	f	18	18 A	17 Febr.	6 Mar t.	21 A	30 Maij
4730	19	v	e	7	8 A	9 Febr.	26 Feb r.	13 A	22 Maii
4731	1	xv ii	d	28	27 M	25 Ian.	11 Feb r.	29 M	7 Maij
4732	2	xx vii i	c b	15	15 A	14 Febr.	2 Mar t.	17 A	26 Maij
4733	3	ix	A	4	4 A	5 Febr.	22 Feb r.	9 A	18 Maij
4734	4	xx	g	24	24 M	21 Ian.	7 Feb r.	25 M	3 Maij
4735	5	j	f	12	12 A	10 Febr.	27 Feb	14 A	23 Maij

A.D.	Gold . No.	Ep ac t	Dom. letters	Full moon D	Lu na 14	Septua gesima	Ash We d.	Easter (new)	Asce nsio n
r.									

Old-calendar leaf — A.D. 4680–4735 (folio 491)

Running head: **CAPVT XXII / MOBILIVM TEMPORARIA**. Same column layout as the 4624–4679 leaf above.

A	D
. Pent	i
D ecos	ff
. t	.
Corpus Christi	
Ind ict.	
Sun. aft. Pent.	
Adve	
nt	
Sun.	
Dom.	
letters (old)	
Luna	
14 (old)	
Easter (old)	
4 13	24 Iunij
6 Iunij	3 23
8	28
0	Nou.
4 29	9 Iunij
6 Maij	4 25
8	27
1	Nou.
4 21	1 Iunij
6 Maij	5 27
8	3 Dec.
2	c
4 10	21 Iunij
6 Iunij	6 24
8	2 Dec.
3	b
4 25	5 Iunij
6 Maij	7 26
8	30
4	Nou.
4 17	28 Maij
6 Maij	8 27
8	29
5	Nou.
	f
	4 A
	7 A
	4
	2

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
4 6 8 6	6 Iunij	17 Iunij	9	24	28 Nou.	e	24 M	30 M	1 4
4 6 8 7	22 Maij	2 Iunij	10	26	27 Nou.	d	12 A	19 A	4 9
4 6 8 8	13 Maij	24 Maii	11	28	2 Dec.	ç b	1 A	3 A	4 2
4 6 8 9	2 Iunij	13 Iunij	12	25	1 Deç.	A	21 M	26 M	1 4
4 6 9 0	25 Maij	5 Iunij	13	26	30 Nou.	g	9 A	15 A	4 2
4 6 9 1	7 Iunij	18 Iunij	14	24	29 Nou.	f	29 M	31 M	1 4
4 6 9 2	29 Maij	9 Iunij	15	25	27 Nou.	e d	17 A	19 A	4 2
4 6 9 3	21 Maij	1 Iunij	1	27	3 Dec.	c	5 A	11 A	4 2
4	3	14 Iunij	2	25	2 Dec.	b	25 M	27 M	1

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
6 9 4	Iunij								4
4 6 9 5	26 Maij	6 Iunij	3	26	1 Dec.	A	13 A	16 A	4 2
4 6 9 6	17 Maij	28 Maij	4	27	29 Nou.	g f	2 A	7 A	4 2
4 6 9 7	6 Iunij	17 Iunij	5	24	28 Nou.	e	22 M	23 M	7
4 6 9 8	22 Maij	2 Iunij	6	26	27 Nou.	d	10 A	12 A	4 2
4 6 9 9	11 Iunij	22 Iunij	7	24	3 Dec.	c	30 M	4 A	1 4
4 7 0 0	3 Iunij	14 Iunij	8	25	2 Dec.	b A	18 A	23 M	4 2
4 7 0 1	19 Maij	30 Maij	9	27	1 Dec.	g	7 A	8 A	4 2
4 7	8 Iunij	19 Iunij	10	24	30 Nou.	f	27 M	31 M	1 4

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
0 2									
4 7 0 3	31 Maij	11 Iunij	11	25	29 Nou.	e	15 A	20 A	4 2
4 7 0 4	15 Maij	26 Maij	12	27	27 Nou.	d c	4 A	11 A	4 9
4 7 0 5	4 Iunij	15 Iunij	13	25	3 Dec.	b	24 M	27 M	1 4
4 7 0 6	27 Maij	7 Iunij	14	26	2 Dec.	A	12 A	16 A	4 2
4 7 0 7	12 Maij	23 Maij	15	28	1 Dec.	g	1 A	8 A	4 9
4 7 0 8	31 Maij	11 Iunij	1	25	29 Nou.	f e	21 M	23 M	1 4
4 7 0 9	23 Maij	3 Iunij	2	26	28 Nou.	d	9 A	12 A	4 2
4 7 1	12 Iunij	23 Iunij	3	23	27 Nou.	c	29 M	4 A	1 4

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
0									
4 7 1 1	28 Maij	8 Iunij	4	26	3 Dec.	b	17 A	24 A	4 9
4 7 1 2	19 Maij	30 Maij	5	27	1 Dec.	A g	5 A	8 A	4 2
4 7 1 3	8 Iunij	19 Iunij	6	24	30 Nou.	f	25 M	31 M	1 4
4 7 1 4	24 Maij	4 Iunii	7	26	29 Nou.	e	13 A	20 A	4 9
4 7 1 5	16 Maij	27 Maij	8	27	28 Nou.	d	2 A	5 A	4 2
4 7 1 6	4 Iunij	15 Iunij	9	25	3 Dec.	c b	22 M	27 M	1 4
4 7 1 7	27 Maij	7 Iunij	10	26	2 Dec.	A	10 A	16 A	4 2
4 7 1 8	12 Maij	23 Maij	11	28	1 Dec.	g	30 M	1 A	4 2

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
4 7 1 9	1 Iunij	12 Iunij	12	25	30 Nou.	f	18 A	21 A	4 2
4 7 2 0	23 Maij	3 Iunij	13	26	28 Nou.	e d	7 A	12 A	4 2
4 7 2 1	12 Iunij	23 Iunij	14	23	27 Nou.	c	27 M	28 M	7
4 7 2 2	28 Maij	8 Iunij	15	26	3 Dec.	b	15 A	17 A	4 2
4 7 2 3	20 Maij	31 Maij	1	27	2 Dec.	A	4 A	9 A	4 2
4 7 2 4	8 Iunij	19 Iunij	2	24	30 Nou.	g f	24 M	31 M	1 4
4 7 2 5	24 Maij	4 Iunij	3	26	29 Nou.	e	12 A	13 A	4 2
4 7 2 6	16 Maij	27 Maij	4	27	28 Nou.	d	1 A	5 A	4 2
4	5	16 Iunij	5	24	27	c	21 M	28 M	1

A D .	Pent ecos t	Corpus Christi	Ind ict.	Sun. aft. Pent.	Adve nt Sun.	Dom. letters (old)	Luna 14 (old)	Easter (old)	D i ff .
7 2 7	Iunij				Nou.				4
4 7 2 8	20 Maij	31 Maij	1	27	2 Dec.	b A	9 A	16 A	4 9
4 7 2 9	9 Iunij	20 Iunij	2	24	30 Nou.	g	29 M	1 A	1 4
4 7 3 0	1 Iunij	12 Iunij	3	26	29 Nou.	f	17 A	21 A	4 2
4 7 3 1	17 Maij	28 Maij	4	27	28 Nou.	e	5 A	6 A	4 2
4 7 3 2	5 Iunij	16 Iunij	5	24	27 Nou.	d c	25 M	28 M	1 4
4 7 3 3	28 Maij	8 Iunij	6	27	2 Dec.	b	13 A	17 A	4 2
4 7 3 4	13 Maij	24 Maij	7	24	1 Dec.	A	2 A	9 A	4 9
4 7	2 Iunij	13 Iunij	8	25	1 Dec.	g	22 M	25 M	1 4

A D . .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
4 7 3 7	7	xx iiij	c	21. 14 A	21 M	24 Ian.	10 Feb.	28 M	6 Mai j
4 7 3 8	8	iiij	b	9. 11 A	9 A	6 Feb.	23 Feb.	10 A	19 Mai j
4 7 3 9	9	xv	A	29. 20 M	29 M	29 Ian.	15 Feb.	2 A	11 Mai j
4 7 4 0	10	xx vj	g f	16. 18 A	17 A	18 Feb.	6 Mar.	21 A	30 Mai j
4 7 4 1	11	vii	e	6. 3 A	6 A	9 Feb.	26 Feb.	13 A	22 Mai j
4 7 4 2	12	xv iiij	d	26. 11 M	26 M	25 Ian.	11 Feb.	29 M	7 Mai j
4 7 4 3	13	xx ix	c	14. 9 A	14 A	15 Feb.	3 Mar.	18 A	27 Mai j
4 7 4 4	14	x	b A	2. 18 A	3 A	6 Feb.	23 Feb.	9 A	18 Mai j
4	15	xx	g	23. 2 M	23	21 Ian.	7 Feb.	25 M	3

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
7 4 5		j			M				Mai j
4 7 4 6	16	ij	f	11. 0 A	11 A	10 Feb.	27 Feb.	14 A	23 Mai j
4 7 4 7	17	xii j	e	31. 9 M	31 M	2 Feb.	19 Feb.	6 A	15 Mai j
4 7 4 8	18	xx iiij	d c	18. 6 A	18 A	22 Feb.	10 Mar.	25 A	3 Iuni j
4 7 4 9	19	v	b	7. 15 A	8 A	6 Feb.	23 Feb.	10 A	19 Mai j
4 7 5 0	1	xv ij	A	28. 0 M	27 M	29 Ian.	15 Feb.	2 A	11 Mai j
4 7 5 1	2	xx vii j	g	15. 22 A	15 A	18 Feb.	7 Mar.	22 A	31 Mai j
4 7 5 2	3	ix	f e	4. 6 A	4 A	3 Feb.	20 Feb.	6 A	15 Mai j
4 7	4	xx	d	24. 15 M	24 M	25 Ian.	11 Feb.	29 M	7 Mai

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
5 3									j
4 7 5 4	5	j	c	12. 13 A	12 A	14 Febr.	3 Mar.	18 A	27 Mai j
4 7 5 5	6	xij	b	1. 22 A	1 A	30 Ian.	16 Feb.	3 A	12 Mai j
4 7 5 6	7	xx iij	A g	21. 6 A	21 M	22 Ian.	8 Feb.	25 M	3 Mai j
4 7 5 7	8	iiij	f	9. 4 A	9 A	10 Feb.	27 Feb.	14 A	23 Mai j
4 7 5 8	9	xv	e	29. 13 M	29 M	26 Ian.	12 Feb.	30 M	8 Mai j
4 7 5 9	10	xx vi	d	17. 10 A	17 A	15 Feb.	4 Mar.	19 A	28 Mai j
4 7 6 0	11	vij	c b	5. 19 A	6 A	7 Feb.	24 Feb.	10 A	19 Mai j
4 7 6	12	xv iij	A	26. 4 M	26 M	29 Ian.	15 Feb.	2 A	11 Mai j

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
1									
4 7 6 2	13	xx ix	g	14. 1 A	14 A	11 Feb.	28 Feb.	15 A	24 Mai j
4 7 6 3	14	x	f	3. 10 A	3 A	3 Feb.	20 Feb.	7 A	16 Mai j
4 7 6 4	15	xx i	e d	22. 19 M	23 M	26 Ian.	12 Feb.	29 M	7 Mai j
4 7 6 5	16	ij	c	10. 17 A	11 A	14 Feb.	3 Mar.	18 A	27 Mai j
4 7 6 6	17	xii j	b	31. 1 M	31 M	30 Ian.	16 Feb.	3 A	12 Mai j
4 7 6 7	18	xx iiij	A	18. 23 A	18 A	19 Feb.	8 Mar.	23 A	1 Iuni j
4 7 6 8	19	v	g f	7. 8 A	8 A	11 Feb.	28 Feb.	14 A	23 Mai j
4 7 6 9	1	xv ij	e	27. 17 M	27 M	26 Ian.	12 Feb.	30 M	8 Mai j

A									
. D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
4 7 7 0	2	xx vii j	d	15. 14 A	15 A	15 Feb.	4 Mar.	19 A	28 Mai j
4 7 7 1	3	ix	c	4. 23 A	4 A	7 Feb.	24 Feb.	11 A	20 Mai j
4 7 7 2	4	xx	b A	24. 8 M	24 M	23 Ian.	9 Feb.	26 M	4 Mai j
4 7 7 3	5	j	g	12. 5 A	12 A	11 Feb.	28 Feb.	15 A	24 Mai j
4 7 7 4	6	xij	f	1. 14 A	1 A	3 Feb.	20 Feb.	7 A	16 Mai j
4 7 7 5	7	xx iij	e	21. 23 M	21 M	19 Ian.	5 Feb.	23 M	1 Mai j
4 7 7 6	8	iiij	d c	8. 20 A	9 A	8 Feb.	25 Feb.	11 A	20 Mai j
4 7 7 7	9	xv	b	29. 5 M	29 M	30 Ian.	16 Feb.	3 A	12 Mai j
4	10	xx	A	17. 3 A	17	19 Feb.	8 Mar.	23 A	1

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
7 7 8		vi			A				Iuni j
4 7 7 9	11	vij	g	6. 12 A	6 A	4 Feb.	21 Feb.	8 A	17 Mai j
4 7 8 0	12	xv iij	f e	25. 20 M	26 M	27 Ian.	13 Feb.	30 M	8 Mai j
4 7 8 1	13	xx ix	d	13. 18 A	14 A	15 Feb.	4 Mar.	19 A	28 Mai j
4 7 8 2	14	x	c	3. 3 A	3 A	31 Ian.	17 Feb.	4 A	13 Mai j
4 7 8 3	15	xx i	b	23. 12 M	23 M	23 Ian.	9 Feb.	27 M	5 Mai j
4 7 8 4	16	ij	A g	10. 9 A	11 A	12 Feb.	29 Feb.	15 A	24 Mai j
4 7 8 5	17	xii j	f	30. 18 M	31 M	3 Feb.	20 Feb.	7 A	16 Mai j
4 7	18	xx iiij	e	18. 15 A	18 A	16 Feb.	5 Mar.	20 A	29 Mai

A	. Aur.	Ep				Lu		Dies		Asc
D	Num	ac	Lit. Dñic.	Plenil. media		na	Septua	Cineru	Pasch	ensi
.	.	t	Greg.	(D. H m)		14	gesima	m	a nou.	o
8										j
6										
4	19	v	d	8. 0 A		8 A	8 Feb.	27 Feb.	12 A	21
7										Mai
8										j
7										
4	1	xv	c b	27. 9 M		31	31 Ian.	17 Feb.	4 A	13
7		ij				M				Mai
8										j
8										
4	2	xx	A	15. 7 A		15	12 Feb.	1 Mar.	16 A	25
7		vii				A				Mai
8		j								j
9										
4	3	ix	g	4. 15 A		4 A	4 Feb.	21 Feb.	8 A	17
7										Mai
9										j
0										
4	4	xx	f	25. 0 M		24	27 Ian.	13 Feb.	31 M	9
7						M				Mai
9										j
1										

Folio 493 — old-calendar continuation, A.D. 4736–4791

Header band: [TABVLA FESTORVM] MOBILIVM TEMPORARIA.

Columns: **Anni Domini** | **Pentecoste** (Pentecost) | **Corpus Domini** (Corpus Christi) | **Indictio** (indiction) | **Dñicæ post Pentecosten** (Sundays after Pentecost) | **Dominica prima Aduentus** (first Sunday of Advent) | **Literæ Dñicales Calendarij veteris** (old-calendar dominical letter[s]) | **Lunæ xiiij. Calendarij veteris** (Luna 14, old calendar) | **Pascha Calendarij veteris** (Easter, old calendar) | **Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt** (days by which new-calendar Easter differs from old-calendar Easter)

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñic. p. Pent.	Dom. I Aduent.	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
4 7 3 6	24 Maij	4 Iunij	14	26	29 Nou.	f e	10 A	13 A	4 2
4 7 3 7	16 Maij	27 Maij	15	27	28 Nou.	d	30 M	5 A	4 2
4 7 3 8	29 Maij	9 Iunij	1	25	27 Nou.	c	18 A	25 A	4 9
4 7 3 9	21 Maij	1 Iunij	2	27	3 Dec.	b	7 A	10 A	4 2
4 7 4 0	9 Iunij	20 Iunij	3	24	1 Dec.	A g	27 M	1 A	1 4
4 7 4 1	1 Iunij	12 Iunij	4	25	30 Nou.	f	15 A	21 A	4 2
4 7 4 2	17 Maij	28 Maij	5	27	29 Nou.	e	4 A	6 A	4 2
4 7 4 3	6 Iunij	17 Iunij	6	24	28 Nou.	d	24 M	29 M	1 4
4	28	8 Iunij	7	26	3 Dec.	c b	12 A	17 A	4

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñic. p. Pent.	Dom. I Aduent.	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
7 4 4	Maij								2
4 7 4 5	13 Maij	24 Maij	8	28	2 Dec.	A	1 A	2 A	4 2
4 7 4 6	2 Iunij	13 Iunij	9	25	1 Dec.	g	21 M	25 M	1 4
4 7 4 7	25 Maij	5 Iunij	10	26	30 Nou.	f	9 A	14 A	4 2
4 7 4 8	13 Iunij	24 Iunij	11	23	28 Nou.	e d	29 M	5 A	1 4
4 7 4 9	29 Maij	9 Iunij	12	25	27 Nou.	c	17 A	18 A	4 2
4 7 5 0	21 Maij	1 Iunij	13	27	3 Dec.	b	5 A	10 A	4 2
4 7 5 1	10 Iunij	21 Iunij	14	24	2 Dec.	A	25 M	26 M	7
4 7	25 Maij	5 Iunij	15	26	30 Nou.	g f	13 A	14 A	4 2

A D . Pent ecost e	Corpus Domini	In dic t.	Dñic. p. Pent.	Dom. I Aduent.	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
5 2 4 7 5 3	17 Maij 28 Maij	1	27	29 Nou.	e	2 A	6 A	4 2
4 7 5 4	6 Iunij 17 Iunij	2	24	28 Nou.	d	22 M	29 M	1 4
4 7 5 5	22 Maij 2 Iunij	3	26	27 Nou.	c	10 A	11 A	4 2
4 7 5 6	13 Maij 24 Maij	4	28	2 Dec.	b A	30 M	2 A	4 2
4 7 5 7	2 Iunij 13 Iunij	5	25	1 Dec.	g	18 A	22 A	4 2
4 7 5 8	18 Maij 29 Maij	6	27	30 Nou.	f	7 A	14 A	4 9
4 7 5 9	7 Iunij 18 Iunij	7	24	29 Nou.	e	27 M	30 M	1 4
4 7 6	29 Maij 9 Iunij	8	25	27 Nou.	d c	15 A	18 A	4 2

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñic. p. Pent.	Dom. I Aduent.	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
0									
4 7 6 1	21 Maij	1 Iunij	9	27	3 Dec.	b	4 A	10 A	4 2
4 7 6 2	3 Iunij	14 Iunij	10	25	2 Dec.	A	24 M	26 M	1 4
4 7 6 3	26 Maij	6 Iunij	11	26	1 Dec.	g	12 A	15 A	4 2
4 7 6 4	17 Maij	28 Maij	12	27	29 Nou.	f e	1 A	6 A	4 2
4 7 6 5	6 Iunij	17 Iunij	13	24	28 Nou.	d	21 M	22 M	7
4 7 6 6	22 Maij	2 Iunij	14	26	27 Nou.	c	9 A	11 A	4 2
4 7 6 7	11 Iunij	22 Iunij	15	24	3 Dec.	b	29 M	3 A	1 4
4 7 6 8	2 Iunij	13 Iunij	1	25	1 Dec.	A g	17 A	22 A	4 2

A D . Pent ecost . e	Corpus Domini	In dic t.	Dñic. p. Pent.	Dom. I Aduent.	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
4 18 7 Maij 6 9	29 Maij	2	27	30 Nou.	f	5 A	7 A	4 2
4 7 7 Iunij 7 0	18 Iunij	3	24	29 Nou.	e	25 M	30 M	1 4
4 30 7 Maij 7 1	10 Iunij	4	25	28 Nou.	d	13 A	19 A	4 2
4 14 7 Maij 7 2	25 Maij	5	28	3 Dec.	c b	2 A	3 A	4 2
4 3 7 Iunij 7 3	14 Iunij	6	25	2 Dec.	A	22 M	26 M	1 4
4 26 7 Maij 7 4	6 Iunij	7	26	1 Dec.	g	10 A	15 A	4 2
4 11 7 Maij 7 5	22 Maij	8	28	30 Nou.	f	30 M	31 M	4 2
4 30 7 Maij 7 6	10 Iunij	9	25	28 Nou.	e d	18 A	19 A	4 2
4 22	2 Iunij	10	26	27 Nou.	c	7 A	11 A	4

A D .	Pent ecost e	Corpus Domini	In dic t.	Dñic. p. Pent.	Dom. I Aduent.	Lit. Dñic. vet.	Luna 14 vet.	Pasch a vet.	D i ff .
7 7 7	Maij								2
4 7 7 8	11 Iunii	22 Iunij	11	24	3 Dec.	b	27 M	3 A	1 4
4 7 7 9	27 Maij	7 Iunij	12	26	2 Dec.	A	15 A	16 A	4 2
4 7 8 0	18 Maij	29 Maij	13	27	30 Nou.	g f	4 A	7 A	4 2
4 7 8 1	7 Iunij	18 Iunij	14	24	29 Nou.	e	24 M	30 M	1 4
4 7 8 2	23 Maij	3 Iunij	15	26	28 Nou.	d	12 A	19 A	4 9
4 7 8 3	15 Maij	26 Maij	1	27	27 Nou.	c	1 A	4 A	4 2
4 7 8 4	3 Iunij	14 Iunij	2	25	2 Dec.	b A	21 M	26 M	1 4
4 7	26 Maij	6 Iunij	3	26	1 Dec.	g	9 A	15 A	4 2

A	Pent		In						D
. D	ecost	Corpus	dic	Dñic. p.	Dom. I	Lit. Dñic.	Luna	Pasch	i
. e	Domini		t. Pent.		Aduent.	vet.	14 vet.	a vet.	ff
8									.
5									
4 8	19 Maij		4	24	30 Nou.	f	29 M	31 M	1
7 Iunij	[recte: Iunij]								4
8									
6									
4 11	22 Iunij		5	25	29 Nou.	e	17 A	20 A	4
7 Iunij									2
8									
7									
4 2	13 Iunij		6	26	27 Nou.	d c	5 A	11 A	4
7 Iunij									2
8									
8									
4 15	26 Iunij		7	25	3 Dec.	b	25 M	27 M	1
7 Iunij									4
8									
9									
4 7	18 Iunij		8	26	2 Dec.	A	13 A	16 A	4
7 Iunij									2
9									
0									
4 19	30 Maij		9	27	1 Dec.	g	2 A	8 A	4
7 Maij									2
9									
1									

Folio 494 — new calendar (Gregorian), A.D. 4792–4847

Header band: **TABVLA FESTORVM [MOBILIVM TEMPORARIA]**

Column head on this leaf reads **Literæ Dominicales Caléd. Grégor.** and **Plenilunia media Cal. Gregor.** with sub-heads **D. / H.**, and **Lunæ xiiii. Calendarii Gregoriani** (spelling as printed).

A									
. D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
4 7 9 2	5	j	e d	11. 22 A	12 A	16 Febr.	4 Mar.	19 A	28 Mai j
4 7 9 3	6	xij	c	1. 7 A	1 A	31 Ian.	17 Febr.	4 A	13 Mai j
4 7 9 4	7	xx iii	b	21. 15 M	21 M	23 Ian.	9 Febr.	27 M	5 Mai j
4 7 9 5	8	iiij	A	9. 13 A	9 A	12 Febr.	1 Mar.	16 A	25 Mai j
4 7 9 6	9	xv	g f	28. 22 M	29 M	28 Ian.	14 Febr.	31 M	9 Mai j
4 7 9 7	10	xx vi	e	16. 19 A	17 A	16 Febr.	5 Mart.	20 A	29 Mai j
4 7 9 8	11	vij	d	6. 4 A	6 A	8 Febr.	25 Febr.	12 A	21 Mai j
4 7 9 9	12	xv iii	c	26. 13 M	26 M	24 Ian.	10 Febr.	28 M	6 Mai j
4	13	xx	b A	13. 10 A	14	13	1 Mar.	16 A	25

A D . .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
8 0 0		ix			A	Febr.			Mai j
4 8 0 1	14	x	g	2. 19 A	3 A	4 Febr.	21 Febr.	8 A	17 Mai j
4 8 0 2	15	xx i	f	23. 4 M	23 M	20 Ian.	6 Febr.	24 M	2 Mai j
4 8 0 3	16	ij	e	11. 2 A	11 A	9 Febr.	26 Febr.	13 A	22 Mai j
4 8 0 4	17	xii i	d c	30. 10 M	31 M	1 Febr.	18 Febr.	4 A	13 Mai j
4 8 0 5	18	xx iii i	b	18. 8 A	18 A	20 Febr.	9 Mar.	24 A	2 Iuni j
4 8 0 6	19	v	A	7. 17 A	8 A	5 Febr.	22 Febr.	9 A	18 Mai j
4 8 0 7	1	xv ii	g	28. 2 M	27 M	28 Ian.	14 Febr.	1 A	10 Mai j
4 8	2	xx vii	f e	14. 23 A	15 A	17 Febr.	5 Mar.	20 A	29 Mai

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
0 8		i							j
4 8 0 9	3	ix	d	4. 8 A	4 A	1 Febr.	18 Febr.	5 A	14 Mai j
4 8 1 0	4	xx	c	24. 17 M	24 M	24 Ian.	10 Febr.	28 M	6 Mai j
4 8 1 1	5	j	b	12. 14 A	12 A	13 Febr.	2 Mart.	17 A	26 Mai j
4 8 1 2	6	xii	A g	31. 23 M	1 A	5 Febr.	22 Febr.	8 A	17 Mai j
4 8 1 3	7	xx iii	f	21. 8 M	21 M	20 Ian.	6 Febr.	24 M	2 Mai j
4 8 1 4	8	iii i	e	9. 5 A	9 A	9 Febr.	26 Febr.	13 A	22 Mai j
4 8 1 5	9	xv	d	29. 14 M	29 M	1 Febr.	18 Febr.	5 A	14 Mai j
4 8 1	10	xx vi	c b	16. 12 A	17 A	21 Febr.	9 Mar.	24 A	2 Iuni j

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
6									
4 8 1 7	11	vij	A	5. 21 A	6 A	5 Febr.	22 Febr.	9 A	18 Mai j
4 8 1 8	12	xv iii	g	26. 5 M	26 M	28 Ian.	14 Febr.	1 A	10 Mai j
4 8 1 9	13	xx ix	f	14. 3 A	14 A	17 Febr.	6 Mar.	21 A	30 Mai j
4 8 2 0	14	x	e d	2. 12 A	3 A	2 Febr.	19 Febr.	5 A	14 Mai j
4 8 2 1	15	xx i	c	22. 21 M	23 M	24 Ian.	10 Febr.	28 M	6 Mai j
4 8 2 2	16	ij	b	10. 18 A	11 A	13 Febr.	2 Mart.	17 A	26 Mai j
4 8 2 3	17	xii i	A	31. 3 M	31 M	29 Ian.	15 Febr.	2 A	11 Mai j
4 8 2 4	18	xx iiij	g f	18. 1 A	18 A	18 Febr.	6 Mart.	21 A	30 Mai j

A D . .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
4 8 2 5	19	v	e	7. 9 A	8 A	9 Febr.	26 Febr.	13 A	22 Mai i
4 8 2 6	1	xv ii	d	27. 18 M	27 M	25 Ian.	11 Febr.	29 M	7 Mai j
4 8 2 7	2	xx vii i	c	15. 16 A	15 A	14 Febr.	3 Mar.	18 A	27 Mai j
4 8 2 8	3	ix	b A	4. 1 A	4 A	6 Febr.	23 Febr.	9 A	18 Mai j
4 8 2 9	4	xx	g	24. 9 M	24 M	21 Ian.	7 Febr.	25 M	3 Mai j
4 8 3 0	5	j	f	12. 7 A	12 A	10 Febr.	27 Febr.	14 A	23 Mai j
4 8 3 1	6	xii	e	1. 16 A	1 A	2 Febr.	19 Febr.	6 A	15 Mai j
4 8 3 2	7	xx iii	d c	21. 0 M	21 M	25 Ian.	11 Febr.	28 M	6 Mai j
4	8	iiij	b	8. 22 A	9 A	6 Febr.	23	10 A	19

A D .	Aur. Num .	Ep ac t	Lit. Dñic. Greg.	Plenil. media (D. H m)	Lu na 14	Septua gesima	Dies Cineru m	Pasch a nou.	Asc ensi o
8 3 3							Febr.		Mai j
4 8 3 4	9	xv	A	29. 7 M	29 M	29 Ian.	15 Febr.	2 A	11 Mai j
4 8 3 5	10	xx vi	g	17. 4 A	17 A	18 Febr.	7 Mar.	22 A	31 Mai j
4 8 3 6	11	vii	f e	5. 13 A	6 A	10 Febr.	27 Febr.	13 A	22 Mai j
4 8 3 7	12	xv iij	d	25. 22 M	26 M	25 Ian.	11 Febr.	29 M	7 Mai j
4 8 3 8	13	xx ix	c	13. 20 A	14 A	14 Febr.	3 Mar.	18 A	27 Mai j
4 8 3 9	14	x	b	3. 4 A	3 A	6 Febr.	23 Febr.	10 A	19 Mai j
4 8 4 0	15	xx j	A g	22. 13 M	23 M	22 Ian.	8 Febr.	25 M	3 Mai j
4 8	16	ij	f	10. 11 A	11 A	10 Febr.	27 Febr.	14 A	23 Mai

A									
.	Aur.	Ep							
D	Num	ac	Lit. Dñic.	Plenil. media	Lu	Septua	Dies	Pasch	Asc
.	.	t	Greg.	(D. H m)	na	gesima	Cineru	a nou.	ensi
.	.				14		m		o
4									j
1									
4	17	xii	e	30. 20 M	31	2 Febr.	19	6 A	15
8		i			M		Febr.		Mai
4									j
2									
4	18	xx	d	18. 17 A	18	15	4 Mart.	19 A	28
8		iii			A	Febr.			Mai
4		i							j
3									
4	19	v	c b	7. 2 A	8 A	7 Febr.	24	10 A	19
8							Febr.		Mai
4									j
4									
4	1	xv	A	27. 11 M	27	29 Ian.	15	2 A	11
8		ii			M		Febr.		Mai
4									j
5									
4	2	xx	g	15. 8 A	15	18	7 Mar.	22 A	31
8		vii			A	Febr.			Mai
4		i							j
6									
4	3	ix	f	4. 17 A	4 A	3 Febr.	20	7 A	16
8							Febr.		Mai
4									j
7									

CAPUT XXII — Tabula Festorum Mobilium Temporaria (continued)

*The great table of the movable feasts, year by year, from 1600 to 5000, continues.
Each opening pairs a new-calendar (Gregorian) leaf with the facing old-calendar*

Month abbreviations are transcribed exactly as printed and are **not** normalized (Mai/Maij/Maii, Iunij/Iunii, Feb./Febr., Mar./Mart., Nou., Dec., Ian.). In the lunar columns M = *Martius* (March) and A = *Aprilis* (April). Two dominical letters mark a bissextile (leap) year. Note that 4900 is a common year on the Gregorian leaf (single dominical letter) but a leap year on the Julian leaf (two letters), a genuine veteris/novi divergence.

Columns: **A.D.** | **Pentecost** (*Pentecoste*, new cal.) | **Corpus Christi** (*Corpus Domini*, new cal.) | **Indiction** (*Indictio*) | **Sundays after Pentecost** (*Dominicæ post Pentecosten*, new cal.) | **First Sunday of Advent** (*Dominica prima Adventus*, new cal.) | **Dominical letter(s), old cal.** (*Literæ Dominicales Cal. veteris*) | **Luna 14, old cal.** (*Lunæ xiiij Cal. veteris*) | **Easter, old cal.** (*Pascha Calendarij veteris*) | **Diff.** (*Dies quibus Pascha Cal. novi à Paschate Cal. veteris differt* — days by which new-calendar Easter differs from old-calendar Easter).

A . D .	Pentecost	Corpus Christi	Indult .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Difference.
4792	7 Iunij	18 Iunij	10	24	29 Nou.	fe	22 M	23 M	7
4793	23 Maij	3 Iunij	11	26	28 Nou.	d	10 A	12 A	42
4794	15 Maij	26 Maij	12	27	27 Nou.	c	30 M	4 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
4 7 9 5	4 Maij	15 Iunij	1 3	25	3 Dec.	b	18 A	24 M	42
4 7 9 6	19 Mai	30 Maij	1 4	27	1 Dec.	A g	7 A	8 A	42
4 7 9 7	8 Iunij	19 Iunij	1 5	24	30 Nou.	f	27 M	31 M	14
4 7 9 8	31 Maij	11 Iunij	1	25	29 Nou.	e	15 A	20 A	42
4 7 9 9	16 Maij	27 Maij	2	27	28 Nou.	d	4 A	5 A	42
4 8 0 0	4 Iunij	15 Iunij	3	25	3 Dec.	ç b	24 M	27 M	14
4 8 0 1	27 Maij	7 Iunij	4	26	2 Dec.	A	12 A	16 A	42
4 8 0 2	12 Maij	23 Maij	5	28	1 Dec.	g	1 A	8 A	49
4	1	12 Iunij	6	25	30	f	21 M	24 M	14

A . D .	Pente cost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
8 0 3	Iunij				Nou.				
4 8 0 4	23 Maij	3 Iunij	7	26	28 Nou.	e d	9 A	12 A	42
4 8 0 5	12 Iunij	23 Iunij	8	23	27 Nou.	c	29 M	4 A	14
4 8 0 6	28 Maij	8 Iunij	9	26	3 Dec.	b	17 A	24 A	49
4 8 0 7	20 Maij	31 Maij	1 0	27	2 Dec.	A	5 A	9 A	42
4 8 0 8	8 Iunij	19 Iunij	1 1	24	30 Nou.	g f	25 M	31 M	14
4 8 0 9	24 Maij	4 Iunij	1 2	26	29 Nou.	e	13 A	20 A	49
4 8 1 0	16 Maij	27 Maij	1 3	27	28 Nou.	d	2 A	5 A	42
4 8	5 Iunij	16 Iunij	1 4	24	27 Nou.	c	22 M	28 M	14

A . D .	Pente cost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
1 1									
4 8 1 2	27 Maij	7 Iunij	1 5	26	2 Dec.	b A	10 A	16 A	42
4 8 1 3	12 Maij	23 Maij	1	28	1 Dec.	g	30 M	1 A	42
4 8 1 4	1 Iunij	12 Iunij	2	25	30 Nou.	f	18 A	21 A	42
4 8 1 5	24 Maij	4 Iunij	3	26	29 Nou.	e	7 A	13 A	42
4 8 1 6	12 Iunij	23 Iunij	4	23	27 Nou.	d c	27 M	28 M	7
4 8 1 7	28 Maij	8 Iunij	5	26	3 Dec.	b	15 A	17 A	42
4 8 1 8	20 Maij	31 Maij	6	27	2 Dec.	A	4 A	9 A	42
4 8 1	9 Iunij	20 Iunij	7	24	1 Dec.	g	24 M	25 M	7

A . D .	Pente cost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
9									
4 8 2 0	24 Maij	4 Iunij	8	26	29 Nou.	f e	12 A	13 A	42
4 8 2 1	16 Maij	27 Maij	9	27	28 Nou.	d	1 A	5 A	42
4 8 2 2	5 Iunij	16 Iunij	1 0	24	27 Nou.	c	21 M	28 M	14
4 8 2 3	21 Maij	1 Iunij	1 1	27	3 Dec.	b	9 A	10 A	42
4 8 2 4	9 Iunij	20 Iunij	1 2	24	1 Dec.	A g	29 M	1 A	14
4 8 2 5	1 Iunij	12 Iunij	1 3	25	30 Nou.	f	17 A	21 A	42
4 8 2 6	17 Maij	28 Maij	1 4	27	29 Nou.	e	5 A	6 A	42
4 8 2 7	6 Iunij	17 Iunij	1 5	24	28 Nou.	d	25 M	29 M	14

A . D .	Pente cost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
4 8 2 8	28 Maij	8 Iunij	1	26	3 Dec.	c b	13 A	17 A	42
4 8 2 9	13 Maij	24 Maij	2	28	2 Dec.	A	2 A	9 A	49
4 8 3 0	2 Iunij	13 Iunij	3	25	1 Dec.	g	22 M	25 M	14
4 8 3 1	25 Maij	5 Iunij	4	26	30 Nou.	f	10 A	14 A	42
4 8 3 2	16 Maij	27 Maij	5	27	28 Nou.	e d	30 M	5 A	42
4 8 3 3	29 Maij	9 Iunij	6	25	27 Nou.	c	18 A	25 A	49
4 8 3 4	21 Maij	1 Iunij	7	27	3 Dec.	b	7 A	10 A	42
4 8 3 5	10 Iunij	21 Iunij	8	24	2 Dec.	A	27 M	2 A	14
4	1	12 Iunij	9	25	30	g f	15 A	21 A	42

A . D .	Pente cost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv.	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	Di ff.
8 3 6	Iunij				Nou.				
4 8 3 7	17 Maij	28 Maij	1 0	27	29 Nou.	e	4 A	6 A	42
4 8 3 8	6 Iunij	17 Iunij	1 1	24	28 Nou.	d	24 M	29 M	14
4 8 3 9	20 Maij	9 Iunij	1 2	25	27 Nou.	c	12 A	18 A	42
4 8 4 0	13 Maij	24 Maii	1 3	28	2 Dec.	b A	1 A	2 A	42
4 8 4 1	2 Iunij	13 Iunij	1 4	25	1 Dec.	g	21 M	25 M	14
4 8 4 2	25 Maij	5 Iunij	1 5	26	30 Nou.	f	9 A	14 A	42
4 8 4 3	7 Iunij	18 Iunij	1	24	29 Nou.	e	29 M	30 M	14
4 8	29 Maij	9 Iunij	2	25	27 Nou.	d c	17 A	18 A	42

A			I						
.			n						
D	Pente	Corpus	d	Sund. p.	1st	Dom.	Luna 14	Easter	Di
.	cost	Christi	.	Pent.	Adv.	(vet.)	(vet.)	(vet.)	ff.
4									
4									
4	21	1 Iunij	3	27	3	b	5 A	10 A	42
8	Maij				Dec.				
4									
5									
4	10	21 Iunij	4	24	2	A	25 M	26 M	7
8	Iunij				Dec.				
4									
6									
4	26	6 Iunij	5	26	1	g	13 A	15 A	42
8	Maij				Dec.				
4									
7									

[New-calendar (Gregorian) leaf — A.D. 4848–4903]

Running head: CALEND. GREGOR. / TABULA FESTORUM

Columns: **A.D.** | **Golden Number** (*Aureus Numerus*) | **Epact** (*Epactæ*) | **Dominical letter(s)**, **Greg.** (*Literæ Dominicales Cal. Greg.*) | **Mean full moon**, **Greg.** (*Plenilunia media Cal. Gregor.*), given as **Day · Hour · Month** (D · H · M/A) | **Luna 14**, **Greg.** (*Lunæ xiiij Cal. Gregoriani*) | **Septuagesima** | **Ash Wednesday** (*Dies Cinerum*) | **Easter, new cal.** (*Pascha Cal. novi*) | **Ascension** (*Ascensio Domini*).

The mean-full-moon **Hour (H)** sub-column is the smallest type on the leaf and does not always resolve on the scan (see parsing notes); its values are best-effort reads.

		D						
A.	G Epac	o			Luna	Septua	Ash	East
D.	N t	m.	Full moon (D·H·M)	14	g.	Wed.	er	Ascensi
48	4 xx	e	24 · 2 · M	24 M	26 Ian.	12 Feb.	29	7 Maij
48		d					M	

A. D.	G Epac N t	D o m.	Full moon (D·H·M)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
48 49	5 j	c	11 · 23 · A	12 A	14 Feb.	3 Mar.	18 A	27 Maij
48 50	6 xij	b	1 · 8 · A	1 A	30 Ian.	16 Feb.	3 A	12 Maij
48 51	7 xxij	A	21 · 17 · M	21 M	22 Ian.	8 Feb.	26 M	4 Maij
48 52	8 iiij	g f	8 · 15 · A	9 A	11 Feb.	28 Feb.	14 A	23 Maij
48 53	9 xv	e	28 · 23 · M	29 M	26 Ian.	12 Feb.	30 M	8 Maij
48 54	1 xxvi 0	d	16 · 21 · A	17 A	15 Feb.	4 Mar.	19 A	28 Maij
48 55	1 vij 1	c	6 · 6 · A	6 A	7 Feb.	24 Feb.	11 A	20 Maij
48 56	1 xvij 2	b A	25 · 15 · M	26 M	30 Ian.	16 Feb.	2 A	11 Maij
48 57	1 xxix 3	g	13 · 12 · A	14 A	11 Feb.	28 Feb.	15 A	24 Maij
48 58	1 x 4	f	2 · 21 · A	3 A	3 Feb.	20 Feb.	7 A	16 Maij
48 59	1 xxi 5	e	23 · 6 · M	23 M	26 Ian.	12 Feb.	30 M	8 Maij
48 60	1 ij 6	d c	10 · 3 · A	11 A	15 Feb.	3 Mar.	18 A	27 Maij
48 61	1 xij 7	b	30 · 12 · M	31 M	30 Ian.	16 Feb.	3 A	12 Maij
48 62	1 xxiii 8 j	A	18 · 10[?] · A	18 A	19 Feb.	8 Mar.	23 A	1 Iunij
48 63	1 v 9	g	7 · 18 · A	8 A	11 Feb.	28 Feb.	15 A	24 Maij
48 64	1 xvij	f e	27 · 3 · M	27 M	27 Ian.	13 Feb.	30 M	8 Maij

A. D.	G Epac N t	D o m.	Full moon (D·H·M)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
48 65	2 xxvi ij	d	15 · 1 · A	15 A	15 Feb.	4 Mar.	19 A	28 Maij
48 66	3 ix	c	4 · 10 · A	4 A	7 Feb.	24 Feb.	11 A	20 Maij
48 67	4 xx	b	24 · 18 · M	24 M	23 Ian.	9 Feb.	27 M	5 Maij
48 68	5 j	A g	11 · 16 · A	12 A	12 Feb.	29 Feb.	15 A	24 Maij
48 69	6 xij	f	1 · 1 · A	1 A	3 Feb.	20 Feb.	7 A	16 Maij
48 70	7 xxiiij	e	21 · 10 · M	21 M	19 Feb.	5 Mar.	23 M	1 Maij
48 71	8 iiij	d	9 · 7 · A	9 A	8 Feb.	25 Feb.	12 A	21 Maij
48 72	9 xv	c b	28 · 16 · M	29 M	31 Ian.	17 Feb.	3 A	12 Maij
48 73	1 xxvi 0	A	16 · 13 · A	17 A	19 Feb.	8 Mar.	23 A	1 Iunij
48 74	1 vij 1	g	5 · 22 · A	6 A	4 Feb.	21 Feb.	8 A	17 Maij
48 75	1 xviiij	f	26 · 7 · M	26 M	27 Ian.	13 Feb.	31 M	9 Maij
48 76	1 xxix 3	e d	13 · 5 · A	14 A	16 Feb.	4 Mar.	19 A	28 Maij
48 77	1 x 4	c	2 · 13 · A	3 A	31 Ian.	17 Feb.	4 A	13 Maij
48 78	1 xxi 5	b	22 · 22 · M	23 M	23 Ian.	9 Feb.	27 M	5 Maij
48 79	1 ij 6	A	10 · 20 · A	11 A	12 Feb.	1 Mar.	16 A	25 Maij
48 80	1 xiiij 7	g f	30 · 5 · M	31 M	4 Feb.	21 Feb.	7 A	16 Maij

A. D.	G Epac N t	D o m.	Full moon (D·H·M)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
48 81	1 xxiii 8 j	e	18 · 2 · A	18 A	16 Feb.	5 Mar.	20 A	29 Maij
48 82	1 v 9	d	7 · 11 · A	8 A	8 Feb.	25 Feb.	12 A	21 Maij
48 83	1 xvij	c	27 · 20 · M	27 M	24 Ian.	10 Feb.	28 M	6 Maij
48 84	2 xxvi ij	b A	14 · 17 · A	15 A	13 Feb.	1 Mar.	16 A	25 Maij
48 85	3 ix	g	4 · 2 · A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
48 86	4 xx	f	24 · 11 · M	24 M	27 Ian.	13 Feb.	31 M	9 Maij
48 87	5 j	e	12 · 8 · A	12 A	9 Feb.	26 Feb.	13 A	22 Maij
48 88	6 xij	d c	31 · 17 · M	1 A	1 Feb.	18 Feb.	4 A	13 Maij
48 89	7 xxiiij	b	21 · 2 · M	21 M	23 Ian.	9 Feb.	27 M	5 Maij
48 90	8 iiij	A	9 · 0 · A	9 A	12 Feb.	1 Mar.	16 A	25 Maij
48 91	9 xv	g	29 · 8 · M	29 M	28 Ian.	14 Feb.	1 A	10 Maij
48 92	1 xxvi 0	f e	16 · 6 · A	17 A	17 Feb.	5 Mar.	20 A	29 Maij
48 93	1 vij 1	d	5 · 15 · A	6 A	8 Feb.	25 Feb.	12 A	21 Maij
48 94	1 xviiij 2	c	26 · 0 · M	26 M	24 Ian.	10 Feb.	28 M	6 Maij
48 95	1 xxix 3	b	13 · 21 · A	14 A	13 Feb.	2 Mar.	17 A	26 Maij
48 96	1 x 4	A g	2 · 6 · A	3 A	5 Feb.	22 Feb.	8 A	17 Maij

A. D.	G Epac N t	D o m.	Full moon (D·H·M)	Luna 14	Septua g.	Ash Wed.	East er	Ascensi on
48 97	1 xxi 5	f	22 · 15 · M	23 M	20 Ian.	6 Feb.	24 M	2 Maij
48 98	1 ij 6	e	10 · 12 · A	11 A	9 Feb.	26 Feb.	13 A	22 Maij
48 99	1 xiiij 7	d	30 · 21 · M	31 M	1 Feb.	18 Feb.	5 A	14 Maij
49 00	1 xxiii 8 j	c	19 · 19 · A	18 A	21 Feb.	10 Mar.	25 A	3 Iunij
49 01	1 v 9	b	8 · 4 · A	8 A	6 Feb.	23 Feb.	10 A	19 Maij
49 02	1 xvij	A	28 · 12 · M	27 M	29 Ian.	15 Feb.	2 A	11 Maij
49 03	2 xxvi ij	g	16 · 10 · A	15 A	18 Feb.	7 Mar.	22 A	31 Maij

[Old-calendar leaf — A.D. 4848–4903]

Columns as on the first leaf above (Pentecost through Advent reckoned on the new calendar; Dominical letter(s), Luna 14, Easter, and Diff. on the old/Julian calendar).

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff.
4 8 4 8	17 Maij	28 Maij	6	27	29 Nou .	f e	2 A	6 A	4 2
4 8 4 9	6 Iunij	17 Iunij	7	24	28 Nou .	d	22 M	29 M	1 4
4 8	22 Maij	2 Iunij	8	26	27 Nou	c	10 A	11 A	4 2

A . D . 5 0	Pent ecost	Corpus Christi	I n d . 9	Sund. p. Pent.	1st Adv . 3	Dom. (vet.) b	Luna 14 (vet.) 30 M	Easter (vet.) 3 A	D i ff. 4
8	14 Maij	25 Maij	28		Dec.				2
5									
1	2 Iunij	13 Iunij	1 0	25	1 Dec.	A g	18 A	22 A	4 2
5									
2	18 Maij	29 Maij	1 1	27	30 Nou .	f	7 A	14 A	4 9
4	7 Iunij	18 Iunij	1 2	24	29 Nou .	e	27 M	30 M	1 4
8									
5	30 Maij	10 Iunij	1 3	25	28 Nou .	d	15 A	19 A	4 2
5									
6	21 Maij	1 Inuij [recte: Iunij]	1 4	27	3 Dec.	ç b	4 A	10 A	4 2
5									
7	3 Iunij	14 Iunij	1 5	25	2 Dec.	A	24 M	26 M	1 4
8									
5	26 Maij	6 Iunij	1	26	1 Dec.	g	12 A	15 A	4 2

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff.
8									
4 8 5 9	18 Maij	29 Maij	2	27	30 Nou .	f	1 A	7 A	4 2
4 8 6 0	6 Iunij	17 Iunij	3	24	28 Nou .	e d	21 M	22 M	7
4 8 6 1	22 Maij	2 Iunij	4	26	27 Nou .	c	9 A	11 A	4 2
4 8 6 2	11 Iunij	22 Iunij	5	24	3 Dec.	b	29 M	3 A	1 4
4 8 6 3	3 Iunij	14 Iunij	6	25	2 Dec.	A	17 A	23 A	4 2
4 8 6 4	18 Maij	29 Maij	7	27	30 Nou .	g f	5 A	7 A	4 2
4 8 6 5	7 Iunij	18 Iunij	8	24	29 Nou .	e	25 M	30 M	1 4
4 8 6 6	30 Maij	10 Iunii	9	25	28 Nou .	d	13 A	19 A	4 2

A . D . .	Pent ecost	Corpus Christi	I n d . .	Sund. p. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff.
4 8 6 7	15 Maij	26 Maij	1 0	27	27 Nou .	c	2 A	4 A	4 2
4 8 6 8	3 Iunij	14 Iunij	1 1	25	2 Dec.	b A	22 M	26 M	1 4
4 8 6 9	26 Maij	6 Iunij	1 2	26	1 Dec.	g	10 A	15 A	4 2
4 8 7 0	11 Maij	22 Maij	1 3	28	30 Nou .	f	30 M	31 M	4 2
4 8 7 1	31 Maij	11 Iunij	1 4	25	29 Nou .	e	18 A	20 A	4 2
4 8 7 2	22 Maij	2 Iunij	1 5	26	27 Nou .	d c	7 A	11 A	4 2
4 8 7 3	11 Iunij	22 Iunij	1	24	3 Dec.	b	27 M	3 A	1 4
4 8 7 4	27 Maij	7 Iunij	2	26	2 Dec.	A	15 A	16 A	4 2
4	19	30 Maij	3	27	1	g	4 A	8 A	4

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff.
8 7 5	Maij				Dec.				2
4 8 7 6	7 Iunij	18 Iunij	4	24	29 Nou .	f e	24 M	30 M	1 4
4 8 7 7	23 Maij	3 Iunij	5	26	28 Nou .	d	12 A	19 A	4 9
4 8 7 8	15 Maij	26 Maij	6	27	27 Nou .	c	1 A	4 A	4 2
4 8 7 9	4 Iunij	15 Iunij	7	25	3 Dec.	b	21 M	27 M	1 4
4 8 8 0	26 Maij	6 Iunij	8	26	1 Dec.	A g	9 A	15 A	4 2
4 8 8 1	8 Iunij	19 Iunij	9	24	30 Nou .	f	29 M	31 M	1 4
4 8 8 2	31 Maij	11 Iunij	1 0	25	29 Nou .	e	17 A	20 A	4 2
4 8	16 Maij	27 Maij	1 1	27	28 Nou	d	5 A	12 A	4 9

A . D .	Pentecost	Corpus Christi	I .	Sund. p. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff.
83					.				
4884	4 Iunij	15 Iunij	12	25	3 Dec.	c b	25 M	27 M	14
4885	27 Maij	7 Iunij	13	26	2 Dec.	A	13 A	16 A	42
4886	19 Maij	30 Maij	14	27	1 Dec.	g	2 A	8 A	42
4887	1 Iunij	12 Iunij	15	25	30 Nou .	f	22 M	24 M	14
4888	23 Maij	3 Iunij	1	26	28 Nou .	e d	10 A	12 A	42
4889	15 Maij	26 Maij	2	27	27 Nou .	c	30 M	4 A	42
4890	4 Iunij	15 Iunij	3	25	3 Dec.	b	18 A	24 A	42
4891	20 Maij	31 Maij	4	27	2 Dec.	A	7 A	9 A	42

A . D .	Pent ecost	Corpus Christi	I n d .	Sund. p. Pent.	1st Adv .	Dom. (vet.)	Luna 14 (vet.)	Easter (vet.)	D i ff.
1									
4 8 9 2	8 Iunij	19 Iunij	5	24	30 Nou .	g f	27 M	31 M	1 4
4 8 9 3	31 Maij	11 Iunij	6	25	29 Nou .	e	15 A	20 A	4 2
4 8 9 4	16 Maij	27 Maij	7	27	28 Nou .	d	4 A	5 A	4 2
4 8 9 5	5 Iunij	16 Iunii	8	24	27 Nou .	c	24 M	28 M	1 4
4 8 9 6	27 Maij	7 Iunij	9	26	2 Dec.	b A	12 A	16 A	4 2
4 8 9 7	12 Maij	23 Maii	1 0	28	1 Dec.	g	1 A	8 A	4 9
4 8 9 8	1 Iunij	12 Iunij	1 1	25	30 Nou .	f	21 M	24 M	1 4
4 8 9 9	24 Maij	4 Iunij	1 2	26	29 Nou .	e	9 A	13 A	4 2

A			I		1st				D
.	Pent		n	Sund. p.	Adv	Dom.	Luna 14	Easter	i
.	ecost	Corpus Christi	.	Pent.	.	(vet.)	(vet.)	(vet.)	ff.
4	13	24 Iunij	1	23	28	d c	29 M	4 A	1
9	Iunij		3		Nou				4
0					.				
0									
4	29	9 Iunij	1	25	27	b	17 A	24 A	4
9	Maij		4		Nou				9
0					.				
1									
4	21	1 Iunij	1	27	3	A	5 A	9 A	4
9	Maij		5		Dec.				2
0									
2									
4	10	21 Iunij	1	24	2	g	25 M	1 A	1
9	Iunij				Dec.				4
0									
3									

Parsing notes

- **Mean-full-moon Hour (H) sub-column (Gregorian leaf, p. 496).** This is the smallest type on the leaf and does not always resolve on this foxed paper; the H values are best-effort reads and are **not citation-grade**. The full-moon **Day**, the **Month (M/A)** marker, **Luna 14**, **Easter**, and every feast-date column read reliably. H for **4862** is ambiguous between 10 and 19 (the leaf seen whole suggests 19, but two closer, overlapping views both show a rounded second digit ≈ 10) — transcribed 10[?]. The hour figures in this column should be treated as provisional throughout.
- **Full-moon Month marker (M/A), Gregorian leaf.** Two markers were read against the Luna-14 month and the 19-year Metonic recurrence and corrected to the value the recurrence + same-lunation constraint require: **4855** = A (Luna 14 = 6 A; Metonic partner 4874 = 5 A), **4880** = M (Day 30, Luna 14 = 31 M; Metonic partner 4861 = 30 M). All other M/A markers agreed with their direct read.
- **Old-calendar Luna 14 cross-check.** The Julian Luna-14 column recurs exactly on a 19-year Metonic period; spot-checks confirmed (4848→4867 = 2

A; 4849→4868 = 22 M; 4857→4876 = 24 M), validating the old-calendar Easter block.

- **Movable-feast cross-check.** On the old-calendar leaves, Pentecost = new-cal Easter + 49 and Corpus Christi = new-cal Easter + 60; verified against the Gregorian Easter column (e.g. 4848: Easter 29 Mar → Pentecost 17 May, Corpus 28 May; 4870: Easter 23 Mar → Pentecost 11 May). This confirms that the first feast block on the old-calendar leaves is reckoned on the new calendar.
- **Epact terminal sorts (i/j).** The small Roman epact numerals read cleanly and j-terminal (house style) in the upper, unfoxed bands (xviiij, xxix, xxiij, xvij, xxviiij, xij, vij, iiiij, xiiij, xxiiij); on the heavily foxed lower rows the terminal hook is often lost to foxing. Epacts are given in the house j-terminal form throughout rather than committing possibly-false i-terminal wrong-sorts; the epact terminal sort on the foxed lower rows is **not citation-grade**, and confirming a genuine wrong-sort there would require a cleaner image of the leaf. No wrong-sort was securely legible on these three leaves.
- **1600-form long-s / hooked dominical.** The cedilla/hooked dominical ç (= c) appears at leap years 4800 and 4856 (both leaves); transcribed ç.
- **Epact 30 asterisk / circle.** No epact-30 cell occurs on these three leaves (the golden-number cycle here runs 4...19,1,2, none landing on epact 30/*).

Source anomalies (transcribed as printed)

- **p. 497 (old-cal leaf), A.D. 4856, Corpus Christi:** printed Inuij — a turned-letter (u/n metathesis) compositor error for Iunij. Both the printed and correct forms are legible; transcribed Inuij [recte: Iunij]. Self-correcting (single cell; the surrounding column reads Iunij).
- **Month-spelling variants (as printed, not normalized):** Mai (p. 495, 4796), Maii (p. 495, 4840; p. 497, 4897), Iunii (p. 497, 4866, 4895). These are house spelling variants, not errors.
- **4900 leap-year divergence (not an error):** single dominical letter c on the Gregorian leaf (4900 common in the new calendar) vs. two letters d c on the Julian leaf (4900 leap in the old calendar). Correct and expected.

Caput XXII — *Tabula Festorum Mobilium* *Temporaria* (continued)

Three leaves of the perpetual table of the movable feasts (A.D. 1600–5000), continuing the run of paired leaves: two Gregorian ("new-calendar") leaves (folios 498 and 500) and, between them, the facing "old-calendar" (*veteris*) continuation leaf (folio 499). Folia 498 and 499 form one opening and share the year-range 4904–4959; folio 500 begins the next opening (4960–5000), whose facing old-calendar leaf falls in the following batch.

Month tokens are transcribed exactly as printed and are **not** normalized. In the mean-full-moon and Luna-14 columns the single letter is the month: A = *Aprilis* (April), M = *Martius* (March). In the feast columns Feb. / Ian. / Mar. and Maij / Maii / Iunij / Iunii stand as set. The mean-full-moon column is given as *day · hour · month*.

Folio 498 — Gregorian ("new-calendar") leaf, A.D. 4904–4959

Columns: A.D. | Golden n^o (*Aur. Num.*) | Epact (*Epactæ*) | Dominical letter(s) (*Lit. Dnicales Calend. Gregg.*; two letters in leap years) | Mean full moon (*Plenilunia media Cal. Gregor.*, day · hour · month) | Luna XIV (*Lunæ xiiij Cal. Gregoriani*) | Septuagesima | Ash Wednesday (*Dies Cinerum*) | Easter (*Pascha Calend. noui*) | Ascension (*Ascensio Domini*).

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
4904	3	ix	f e	4 · 91 · A	4 A	3 Feb.	20 Feb.	6 A	15 Maij
4905	4	xx	d	25 · 3 · M	24 M	15 Feb.	11 Feb.	29 M	7 Maij
4906	5	j	c	13 · 1 · A	12 A	14 Feb.	3 Mar.	18 A	27 Maij
4907	6	xij	b	2 · 10 · A	1 A	30 Ian.	16 Feb.	3 A	12 Maij
4908	7	xxi ij	A g	21 · 19 · M	21 M	22 Ian.	8 Feb.	25 M	3 Maij

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
4909	8	iiiij	f	9 · 16 · A	9 A	10 Feb.	27 Feb.	14 A	23 Maij
4910	9	xv	e	30 · 1 · M	29 M	26 Ian.	12 Feb.	30 M	8 Maij
4911	10	xx vi	d	17 · 23 · A	17 A	15 Feb.	4 Mar.	19 A	28 Maij
4912	11	vii	c b	6 · 7 · A	6 A	7 Feb.	24 Feb.	10 A	19 Maij
4913	12	xvi ii	A	26 · 16 · M	26 M	29 Ian.	15 Feb.	2 A	11 Maij
4914	13	xxi x	g	14 · 14 · A	14 A	11 Feb.	28 Feb.	15 A	24 Maij
4915	14	x	f	3 · 23 · A	3 A	3 Feb.	20 Feb.	7 A	16 Maij
4916	15	xxi	e d	23 · 7 · M	23 M	26 Ian.	12 Feb.	29 M	7 Maij
4917	16	ii	c	11 · 5 · A	11 A	14 Feb.	3 Mar.	18 A	27 Maij
4918	17	xiii	b	31 · 14 · M	31 M	30 Ian.	16 Feb.	3 A	12 Maij
4919	18	xxi iii	A	19 · 11 · A	18 A	19 Feb.	8 Mar.	23 A	1 Iunij
4920	19	v	g f	7 · 20 · A	8 A	11 Feb.	28 Feb.	14 A	23 Maij
4921	1	xvi i	e	28 · 5 · M	27 M	26 Ian.	12 Feb.	30 M	8 Maij
4922	2	xx viii	d	16 · 2 · A	15 A	15 Feb.	4 Mar.	19 A	28 Maij
4923	3	ix	c	5 · 11 · A	4 A	7 Feb.	24 Feb.	11 A	20 Maij
4924	4	xx	b	24 · 20 · M	24 M	23	9	26	4 Maij

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
			A			Ian.	Feb.	M	
4925	5	j	g	12 · 18 · A	12 A	11 Feb.	28 Feb.	15 A	24 Maij
4926	6	xij	f	2 · 2 · A	1 A	3 Feb.	20 Feb.	7 A	16 Maij
4927	7	xxi ij	e	22 · 11 · M	21 M	19 Ian.	5 Feb.	23 M	1 Maij
4928	8	iiij	d c	9 · 9 · A	9 A	8 Feb.	25 Feb.	11 A	20 Maij
4929	9	xv	b	29 · 18 · M	29 M	30 Ian.	16 Feb.	3 A	12 Maij
4030 [recte: 4930]	10	xx vi	A	17 · 15 · A	17 A	19 Feb.	8 Mar.	23 A	1 Iunij
4931	11	vij	g	7 · 0 · A	6 A	4 Feb.	21 Feb.	8 A	17 Maij
4932	12	xvi ii	f e	26 · 9 · M	26 M	27 Ian.	13 Feb.	30 M	8 Maij
4933	13	xxi x	d	14 · 6 · A	14 A	15 Feb.	4 Mar.	19 A	28 Maij
4934	14	x	c	3 · 15 · A	3 A	31 Ian.	17 Feb.	4 A	13 Maij
4935	15	xxi	b	24 · 0 · M	23 M	23 Ian.	9 Feb.	27 M	5 Maij
4936	16	ii	A g	10 · 21 · A	11 A	12 Feb.	29 Feb.	15 A	24 Maij
4937	17	xiii	f	31 · 6 · M	31 M	3 Feb.	20 Feb.	7 A	16 Maij
4938	18	xxi iii	e	19 · 4 · A	18 A	16 Feb.	5 Mar.	20 A	29 Maij
4939	19	v	d	8 · 13 · A	8 A	8 Feb.	25 Feb.	12 A	21 Maij

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
4940	1	xvi i	c b	27 · 21 · M	27 M	31 Ian.	17 Feb.	3 A	12 Maij
4941	2	xx viiij	A	15 · 19 · A	15 A	12 Feb.	1 Mar.	16 A	25 Maij
4942	3	ix	g	5 · 4 · A	4 A	4 Feb.	21 Feb.	8 A	17 Maij
4943	4	xx	f	25 · 13 · M	24 M	27 Ian.	13 Feb.	31 M	9 Maij
3944 [recte: 4944]	5	j	e d	12 · 10 · A	12 A	16 Feb.	4 Mar.	19 A	28 Maij
3945 [recte: 4945]	6	xii	c	1 · 19 · A	1 A	31 Ian.	17 Feb.	4 A	13 Maij
3946 [recte: 4946]	7	xxi ii	b	22 · 4 · M	21 M	23 Ian.	9 Feb.	27 M	5 Maij
3947 [recte: 4947]	8	iiii	A	10 · 1 · A	9 A	12 Feb.	1 Mar.	16 A	25 Maij
3948 [recte: 4948]	9	xv	g f	29 · 10 · M	29 M	28 Ian.	14 Feb.	31 M	9 Maii
3949 [recte: 4949]	10	xx vi	e	17 · 8 · A	17 A	16 Feb.	5 Mar.	20 A	29 Maij
3950 [recte: 4950]	11	vii	d	6 · 16 · A	6 A	8 Feb.	25 Feb.	12 A	21 Maij
3951 [recte: 4951]	12	xvi ii	c	27 · 1 · M	26 M	24 Ian.	10 Feb.	28 M	6 Maii
3952 [recte: 4952]	13	xxi x	b A	13 · 23 · A	14 A	13 Feb.	1 Mar.	16 A	25 Maij
3953 [recte: 4953]	14	x	g	3 · 8 · A	3 A	4 Feb.	21 Feb.	8 A	17 Maii
3954 [recte: 4954]	15	xxi	f	23 · 16 · M	23 M	20 Ian.	6 Feb.	24 M	2 Maii

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
3955 [recte: 4955]	16	ij	e	11 · 14 · A	11 A	9 Feb.	26 Feb.	13 A	22 Maii
3956 [recte: 4956]	17	xiii	d c	30 · 23 · M	31 M	1 Feb.	18 Feb.	4 A	13 Maii
3957 [recte: 4957]	18	xxi iii	b	18 · 20 · A	18 A	20 Feb.	9 Mar.	24 A	2 Iunij
3958 [recte: 4958]	19	v	A	8 · 5 · A	8 A	5 Feb.	22 Feb.	9 A	18 Maii
3959 [recte: 4959]	1	xvi i	g	28 · 14 · M	27 M	28 Ian.	14 Feb.	1 A	10 Maii

Columns: A.D. | Pentecost (*Pentecoste*) | Corpus Christi (*Corpus Domini*) | Indiction (*Indictio*) | Sundays after Pentecost (*Dnicæ post Pentecosten*) | First Sunday of Advent (*Dominica prima Aduentus*) | Dominical letter(s), old calendar (*Literæ Dominicales Calend. veteris*) | Luna XIV, old calendar (*Lunæ xiiij Calend. veteris*) | Easter, old calendar (*Pascha Calendarij veteris*) | Difference in days between new- and old-calendar Easter (*Dies quibus Pascha Calend. noui à Paschate Calend. veteris differt*).

A . D . .	Pent ecost	Corpus	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (old)	Luna XIV (old)	Easter (old)	D i ff.
4 9 0 6	6 Iunij	17 Iunij	4	24	28 Nou .	c	22 M	28 M	1 4
4 9 0 7	22 Maij	2 Iunij	5	26	27 Nou .	b	10 A	17 A	4 9
4 9 0 8	13 Maij	24 Maij	6	28	2 Dec.	A g	30 M	1 A	4 2
4 9 0 9	2 Iunij	13 Iunij	7	25	1 Dec.	f	18 A	21 A	4 2
4 9 1 0	18 Maij	29 Maij	8	27	30 Nou .	e	7 A	13 A	4 9
4 9 1 1	7 Iunij	18 Iunij	9	24	29 Nou .	d	27 M	29 M	1 4
4 9 1 2	29 Maij	9 Iunij	10	25	27 Nou .	c b	15 A	17 A	4 2
4 9 1 3	21 Maij	1 Inuij [recte: Iunij]	11	27	3 Dec.	A	4 A	9 A	4 2
4	3	14 Iunij	12	25	2	g	24 M	25 M	1

A . D . .	Pent ecost	Corpus	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (old)	Luna XIV (old)	Easter (old)	D i ff.
9 1 4	Iunij				Dec.				4
4 9 1 5	26 Maij	6 Iunij	13	26	1 Dec.	f	12 A	14 A	4 2
4 9 1 6	17 Maij	28 Maij	14	27	29 Nou .	e d	1 A	5 A	4 2
4 9 1 7	6 Iunij	17 Iunij	15	24	28 Nou .	c	21 M	28 M	1 4
4 9 1 8	22 Maij	2 Iunij	1	26	27 Nou .	b	9 A	10 A	4 2
4 9 1 9	11 Iunij	22 Iunij	2	24	3 Dec.	A	29 M	2 A	1 4
4 9 2 0	2 Iunij	13 Iunij	3	25	1 Dec.	g f	17 A	21 A	4 2
4 9 2 1	18 Maij	29 Maij	4	27	30 Nou .	e	5 A	6 A	4 2
4 9	7 Iunij	18 Iunij	5	24	29 Nou	d	25 M	29 M	1 4

A . D .	Pentecost	Corpus	Indict.	Sund. p. Pent.	Adv. ent I	Dom. (old)	Luna XIV (old)	Easter (old)	D i ff.
0									
4 9 3 1	27 Maij	7 Iunij	14	26	2 Dec.	g	15 A	22 A	4 9
4 9 3 2	18 Maij	29 Maij	15	27	30 Nou .	f e	4 A	6 A	4 2
4 9 3 3	7 Iunij	18 Iunij	1	24	29 Nou .	d	24 M	29 M	1 4
4 9 3 4	23 Maij	3 Iunij	2	26	28 Nou .	c	12 A	18 A	4 9
4 9 3 5	15 Maij	26 Maij	3	27	27 Nou .	b	1 A	3 A	4 2
4 9 3 6	3 Iunij	14 Iunij	4	25	2 Dec.	A g	21 M	25 M	1 4
4 9 3 7	26 Maij	6 Iunij	5	26	1 Dec.	f	9 A	14 A	4 2
4 9 3 8	8 Iunij	19 Iunij	6	24	30 Nou .	e	29 M	30 M	1 4

A . D . .	Pent ecost	Corpus	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (old)	Luna XIV (old)	Easter (old)	D i ff.
4 9 3 9	31 Maij	11 Iunij	7	25	29 Nou .	d	17 A	19 A	4 2
4 9 4 0	22 Maij	2 Iunij	8	26	27 Nou .	c b	5 A	10 A	4 2
4 9 4 1	4 Iunij	15 Iunij	9	25	3 Dec.	A	25 M	26 M	1 4
4 9 4 2	27 Maij	7 Iunij	10	26	2 Dec.	g	13 A	15 A	4 2
4 9 4 3	19 Maij	30 Maij	11	27	1 Dec.	f	2 A	7 A	4 2
4 9 4 4	7 Iunij	18 Iunij	12	24	29 Nou .	e d	22 M	29 M	1 4
4 9 4 5	23 Maij	3 Iunij	13	26	28 Nou .	c	10 A	11 A	4 2
4 9 4 6	15 Maij	26 Maij	14	27	27 Nou .	b	30 M	3 A	4 2
4	4	15 Iunij	15	25	3	A	18 A	23 A	4

A . D . .	Pent ecost	Corpus	Ind ict.	Sund. p. Pent.	Adv ent I	Dom. (old)	Luna XIV (old)	Easter (old)	D i ff.
9 4 7	Iunij				Dec.				2
4 9 4 8	19 Maij	30 Maij	1	27	1 Dec.	g f	7 A	14 A	4 9
4 9 4 9	8 Iunij	19 Iunij	2	24	30 Nou .	e	27 M	30 M	1 4
4 9 5 0	31 Maij	11 Iunij	3	25	29 Nou .	d	15 A	19 A	4 2
4 9 5 1	16 Maij	27 Maij	4	27	28 Nou .	c	4 A	11 A	4 9
4 9 5 2	4 Iunij	15 Iunii	5	25	3 Dec.	b A	24 M	26 M	1 4
4 9 5 3	27 Maij	7 Iunij	6	26	2 Dec.	g	12 A	15 A	4 2
4 9 5 4	12 Maij	23 Maii	7	28	1 Dec.	f	1 A	7 A	4 9
4 9	1 Iunij	12 Iunij	8	25	30 Nou	e	21 M	23 M	1 4

A									
.	D	Pent		Ind	Sund. p.	Adv	Dom.	Luna	D
.	ecost	Corpus		ict.	Pent.	ent	(old)	XIV (old)	i
.						I		(old)	ff.
5						.			
5									
4	23	3 Iunij		9	26	28	d c	9 A	4
9	Maij					Nou		11 A	2
5						.			
6									
4	12	23 Iunij		10	23	27	b	29 M	1
9	Iunij					Nou		3 A	4
5						.			
7									
4	28	8 Iunij		11	26	3	A	17 A	4
9	Maij					Dec.		23 A	9
5									
8									
4	20	31 Maij		12	27	2	g	5 A	4
9	Maij					Dec.		8 A	2
5									
9									

Folio 500 — Gregorian ("new-calendar") leaf, A.D. 4960–5000

Columns as folio 498.

			D						
	G	Ep	o	Full moon	Luna	Sept	Ash	Eas	Ascen
A.D.	ol	act	m	(d·h·m)	XIV	uag.	Wed.	ter	sion
4960	2	xx	f	15 · 11 · A	15 A	17	5	20	29
		viii	e			Feb.	Mar.	A	Maij
4961	3	ix	d	4 · 20 · A	4 A	1	18	5 A	14
						Feb.	Feb.		Maij
4962	4	xx	c	25 · 5 · M	24 M	24	10	28	6 Maij
						Ian.	Feb.	M	
4963	5	j	b	13 · 3 · A	12 A	13	2	17	26

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
						Feb.	Mar.	A	Maij
4964	6	xij	A g	1 · 11 · A	1 A	5 Feb.	22 Feb.	8 A	17 Maij
4965	7	xxi ij	f	21 · 20 · M	21 M	20 Ian.	6 Feb.	24 M	2 Maij
4966	8	iiij	e	9 · 18 · A	9 A	9 Feb.	26 Feb.	13 A	22 Maij
4967	9	xv	d	30 · 3 · M	29 M	1 Feb.	18 Feb.	5 A	14 Maij
4968	10	xx vi	c b	17 · 0 · A	17 A	21 Feb.	9 Mar.	24 A	2 Iunij
4969	11	vii	A	6 · 9 · A	6 A	5 Feb.	22 Feb.	9 A	18 Maij
4970	12	xvi ii	g	26 · 18 · M	26 M	28 Ian.	14 Feb.	1 A	10 Maij
4971	13	xxi x	f	14 · 15 · A	14 A	17 Feb.	6 Mar.	21 A	30 Maij
4972	14	x	e d	3 · 0 · A	3 A	2 Feb.	19 Feb.	5 A	14 Maij
4973	15	xxi	c	23 · 9 · M	23 M	24 Ian.	10 Feb.	28 M	6 Maij
4974	16	ii	b	11 · 7 · A	11 A	13 Feb.	2 Mar.	17 A	26 Maij
4975	17	xiii	A	31 · 15 · M	31 M	29 Ian.	15 Feb.	2 A	11 Maij
4976	18	xxi iii	g f	18 · 13 · A	18 A	18 Feb.	6 Mar.	21 A	30 Maij
4977	19	v	e	7 · 22 · A	8 A	9 Feb.	26 Feb.	13 A	22 Maij
4978	1	xvi i	d	28 · 6 · M	27 M	25 Ian.	11 Feb.	29 M	7 Maij

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
4979	2	xx viii	c	16 · 4 · A	15 A	14 Feb.	3 Mar.	18 A	27 Maij
4980	3	ix	b A	4 · 13 · A	4 A	6 Feb.	23 Feb.	9 A	18 Maij
4981	4	xx	g	24 · 22 · M	24 M	21 Ian.	7 Feb.	25 M	3 Maij
4982	5	j	f	12 · 19 · A	12 A	10 Feb.	27 Feb.	14 A	23 Maij
4983	6	xij	e	2 · 4 · A	1 A	2 Feb.	19 Feb.	6 A	15 Maij
4984	7	xxi ij	d c	21 · 13 · M	21 M	25 Ian.	11 Feb.	28 M	6 Maij
4985	8	iiij	b	9 · 10 · A	9 A	6 Feb.	23 Feb.	10 A	19 Maij
4986	9	xv	A	29 · 19 · M	29 M	29 Ian.	15 Feb.	2 A	11 Maij
4987	10	xx vi	g	17 · 17 · A	17 A	18 Feb.	7 Mar.	22 A	31 Maij
4988	11	vij	f e	6 · 2 · A	6 A	10 Feb.	27 Feb.	13 A	22 Maij
4989	12	xvi ii	d	26 · 10 · M	26 M	25 Ian.	11 Feb.	29 M	7 Maij
4090 [recte: 4990]	13	xxi x	c	14 · 8 · A	14 A	14 Feb.	3 Mar.	18 A	27 Maij
4991	14	x	b	3 · 17 · A	3 A	6 Feb.	23 Feb.	10 A	19 Maij
4992	15	xxi	A g	23 · 2 · M	23 M	22 Ian.	8 Feb.	25 M	3 Maij
4993	16	ii	f	10 · 23 · A	11 A	10 Feb.	27 Feb.	14 A	23 Maij
4994	17	xiii	e	31 · 8 · M	31 M	2	19	6 A	15

A.D.	G ol d.	Ep act	D o m .	Full moon (d·h·m)	Luna XIV	Sept uag.	Ash Wed.	Eas ter	Ascen sion
						Feb.	Feb.		Maij
4995	18	xxi iii	d	19 · 5 · A	18 A	15 Feb.	4 Mar.	19 A	28 Maij
4996	19	v b	c	7 · 14 · A	8 A	7 Feb.	24 Feb.	10 A	19 Maij
4997	1	xvi i	A	27 · 23 · M	27 M	29 Ian.	15 Feb.	2 A	11 Maij
4998	2	xx viiij	g	15 · 21 · A	15 A	18 Feb.	7 Mar.	22 A	31 Maij
4999	3	ix	f	5 · 5 · A	4 A	3 Feb.	20 Feb.	7 A	16 Maij
5000	4	xix	e	26 · 14 · M	25 M	26 Ian.	12 Feb.	30 M	8 Maij

Caput XXII — Table of Movable Feasts (concluded); on the accuracy of the Epact cycle

Tabula Festorum Mobilium Temporaria — old-calendar leaf,
A.D. 4960–5000 (folio 501)

This is the facing old-calendar (*veteris*) leaf that completes the double spread; the Gregorian half stood on the preceding verso. The table closes at A.D. 5000 (a Julian leap year, hence a two-letter Dominical). Columns as printed:

- **Anni Domini** — year of the Lord
- **Pentecoste** — Pentecost (day · month)
- **Corpus Domini** — Corpus Christi (day · month)
- **Indictio** — Indiction
- **Dnicæ post Pentecosten** — Sundays after Pentecost
- **Dominica prima Adventus** — First Sunday of Advent (day · month)
- **Literæ Dominicales Calendarii veteris** — Dominical letters, old Calendar (two in leap years)

- **Lunæ xiiij. Calendarii veteris** — 14th (Paschal) moon, old Calendar (day · M = *Martij* / A = *Aprilis*)
- **Pascha Calendarii veteris** — Easter, old Calendar (day · M/A)
- **Dies quibus Pascha Calend. novi à Paschate Calend. veteris differt** — days by which new-Calendar Easter differs from old-Calendar Easter (Diff.)

Anni Domini	Pen- tecto- ste	Corpu s Domi- ni	In- dic- tio	Dnicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ xiiij. vet.	Pasc- ha vet.	Diff f .
4960	8 Iuni j	19 Iunij	13	24	30 Nou.	f e	25 M	30 M	1 4
4961	24 Mai j	4 Iunij	14	26	29 Nou.	d	13 A	19 A	4 9
4962	16 Mai j	27 Maij	15	27	28 Nou.	c	2 A	4 A	4 2
4963	5 Iuni j	16 Iunij	1	24	27 Nou.	b	22 M	27 M	1 4
4964	27 Mai j	7 Iunij	2	26	2 Dec.	A g	10 A	15 A	4 2
4965	12 Mai j	23 Maij	3	28	1 Dec.	f	30 M	31 M	4 2
4966	1 Iuni j	12 Iunij	4	25	30 Nou.	e	18 A	20 A	4 2
4967	24 Mai j	4 Iunij	5	26	29 Nou.	d	7 A	12 A	4 2
4968	12 Iuni j	23 Iunij	6	23	27 Nou.	c b	27 M	3 A	1 4

Anni Dom ini	Pen teco ste	Corpu s Domi ni	In dic tio	Dnicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ xiiij. vet.	Pasc ha vet.	D i ff f .
4969	28 Mai j	8 Iunij	7	26	3 Dec.	A	15 A	16 A	4 2
4970	20 Mai j	31 Maij	8	27	2 Dec.	g	4 A	8 A	4 2
4971	9 Iuni j	20 Iunij	9	24	1 Dec.	f	24 M	31 M	4 2
4972	24 Mai j	4 Iunij	10	26	29 Nou.	e d	12 A	19 A	4 9
4973	16 Mai j	27 Maij	11	27	28 Nou.	c	1 A	4 A	4 2
4974	5 Iuni j	16 Iunij	12	24	27 Nou.	b	21 M	27 M	1 4
4975	21 Mai j	1 Iunij	13	27	3 Dec.	A	9 A	16 A	4 9
4976	9 Iuni j	20 Iunij	14	24	1 Dec.	g f	29 M	31 M	1 4
4977	1 Iuni j	12 Iunij	15	25	30 Nou.	e	17 A	20 A	4 2
4978	17 Mai j	28 Maij	1	27	29 Nou.	d	5 A	12 A	4 9
4979	6 Iuni	17	2	24	28 Nou.	c	25 M	28 M	1

Anni Dom ini	Pen teco ste	Corpu s Domi ni	In dic tio	Dnicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ xiiij. vet.	Pasc ha vet.	D i ff f .
	j	Iunij							4
4980	28 Mai j	8 Iunij	3	26	3 Dec.	b A	13 A	16 A	4 2
4981	13 Mai j	24 Maij	4	28	2 Dec.	g	2 A	8 A	4 9
4982	2 Iuni j	13 Iunij	5	25	1 Dec.	f	22 M	24 M	1 4
4983	25 Mai j	5 Iunij	6	26	30 Nou.	e	10 A	13 A	4 2
4984	16 Mai j	27 Maij	7	27	28 Nou.	d c	30 M	4 A	4 2
4985	29 Mai j	9 Iunij	8	25	27 Nou.	b	18 A	24 A	4 9
4986	21 Mai j	1 Iunij	9	27	3 Dec.	A	7 A	9 A	4 2
4987	10 Iuni j	21 Iunij	10	24	2 Dec.	g	27 M	1 A	1 4
4988	1 Iuni j	12 Iunij	11	25	30 Nou.	f e	15 A	20 A	4 2
4989	17 Mai j	28 Maij	12	27	29 Nou.	d	4 A	5 A	4 2

Anni Dom ini	Pen teco ste	Corpu s Domi ni	In dic tio	Dnicæ post Pent.	Dominica prima Adventus	Lit. Dom. vet.	Lunæ xiiij. vet.	Pasc ha vet.	D i ff f .
4990	6 Iuni j	17 Iunij	13	24	28 Nou.	c	24 M	28 M	1 4
4991	29 Mai j	9 Iunij	14	25	27 Nou.	b	12 A	17 A	4 2
4992	13 Mai j	24 Maij	15	28	2 Dec.	A g	1 A	8 A	4 9
4993	2 Iuni j	13 Iunij	1	25	1 Dec.	f	21 M	24 M	1 4
4994	25 Mai j	5 Iunij	2	26	30 Nou.	e	9 A	13 A	4 2
4995	7 Iuni j	18 Iunij	3	24	29 Nou.	d	29 M	5 A	2 1
4996	29 Mai j	9 Iunij	4	25	27 Nou.	c b	17 A	24 A	4 9
4997	21 Mai j	1 Iunij	5	27	3 Dec.	A	5 A	9 A	4 2
4998	10 Iuni j	21 Iunij	6	24	2 Dec.	g	25 M	1 A	1 4
4999	26 Mai j	6 Iunij	7	26	1 Dec.	f	13 A	14 A	4 2
5000	18 Mai	29	8	27	30 Nou.	e d	2 A	5 A	4

									D
		Corpu							i
Anni	Pen	s	In	Dnicæ	Dominica	Lit.		Pasc	ff
Dom	teco	Domi	dic	post	prima	Dom.	Lunæ	ha	f
ini	ste	ni	tio	Pent.	Adventus	vet.	xiiij. vet.	vet.	.
	j	Maij							2

- Moreover, if one examines the preceding table with any care, he will see very clearly that our cycle of Epacts is rightly distributed and adjusted within the Calendar. For it almost always yields the Paschal 14th moons in such a way that the day following either falls on the mean full moon or follows it by no great interval — which agrees most aptly with the decrees of the Councils and the enactments of the holy Fathers. Thus it comes about that Easter is always celebrated either at the mean full moon or after it, all the way to the year 5000; and we shall find the same holding good in the years beyond, if we care to extend the table to more years. [Margin: The Paschal table above shows that the Epacts correctly indicate the 14th moons.]

A few years are excepted — these fifteen, namely 2133, 2491, 2725, 3083, 3300, 3317, 3344, 3611, 3631, 3675, 3909, 3936, 4047, 4619, 4639 — in which the 14th moons appear to run ahead of the mean oppositions more than is proper, so much so that in these same years the mean opposition falls after sunset on Easter day. But this ought not to seem surprising to anyone, since it springs from the very nature of a cycle, whatever cycle it be, and occurs more often in any other cycle than in this our cycle of Epacts, as I shall show a little below. [Margin: In which years the 14th moons seem to run ahead of the mean oppositions more than is right.]

There are indeed 26 further years — namely 1900, 2106, 2451, 2718, 2738, 3043, 3063, 3310, 3330, 3401, 3459, 3479, 3500, 3635, 3648, 3655, 3726, 3902, 3922, 4051, 4071, 4318, 4643, 4663, 4910, 4995 — in which the mean full moon falls on Easter day itself, after noon but before sunset. Yet this should not be reckoned altogether contrary to the Canon of the Council of Nicaea, since in this matter the full moon must be taken with some latitude, and not as an instant of time in the way the astronomers take it. [Margin: That the mean full moon falling on Easter day before sunset is not contrary to the Canon of the Council of Nicaea.] Only that Easter seems to run counter to the Decree of the Council of Nicaea which has its mean full moon after sunset — as is the Easter in the fifteen years enumerated above. For when the full moon occurs before sunset, it can rightly and with the

best of justice be said that Easter is celebrated at the full moon itself, since it then falls before the end of Easter day, which the Canons do not forbid.

Much less is that Easter altogether illegitimate in which the mean full moon occurs before noon, or even at noon itself, since it is then manifestly celebrated at the full moon itself, seeing that the full moon in that case too falls before the end of Easter day. I would not deny, however, that Easter is more correctly celebrated if the full moon occurs before sunrise on Easter day; but since no cycle can always secure this, that Easter ought not to be judged altogether illegitimate in which the full moon falls after noon but before sunset, and still less that in which the full moon occurs before noon but after sunrise — especially if this happens rarely. There are besides some other years, from the year 1600 to the year 5000, in which the Paschal 14th moons precede the mean oppositions by somewhat more than a whole day; but because the day immediately following is not a Sunday, Easter will not then be celebrated before the full moon, but either at it or after it, so that the Dominical letter very neatly amends and corrects the error that would otherwise be admitted into the celebration of Easter. This was the reason we did not count these years among the former ones.

But you will say: ought not that cycle to be preferred which avoided all these inconveniences? Quite rightly, and I gladly agree with you here; yet that such a cycle can be found is more to be wished than hoped for, since no cycle can be built that does not now and then fall into error, as we showed in chapter 20, Num. 9. The one thing to be most carefully seen to is that the cycle be chosen above the rest which contains the fewest errors — and that this is our cycle we have shown at length above, especially in chapter 19, Num. 7 and 8, where we set out several years in which one and the same Epact number exhibits the 14th moon now before the mean opposition, now after it; so that the Epacts cannot be more fittingly distributed in the Calendar than they are arranged. For if you were to advance them to higher places, or thrust them down to lower ones, you would fall into greater absurdities, as is plainly clear. [Margin: That the same Epact presents the 14th moon now anticipated, now postponed, and now finally consonant with the Canons.]

The very same thing happens in the years enumerated above. Take, for instance, the year 3300, in which the Epact 17 is charged on this ground — that it offers us the 14th moon more than is right before the mean opposition, and so sets Easter to be celebrated before the mean full moon, which then falls after sunset. What of it? Are the Epacts on that account to be rolled down to lower days, so that Epact 17 might show its own 14th moon later? By no means. For since the same Epact

17 — in these years, 3110, 3129, 3167, 3186, 3243, 3338, 3357, 3376, 3395 — shows the Paschal 14th moon most correctly, as the Canons require (as is clear from the table of movable feasts above), while in those years, 3148, 3205, 3224, 3262, 3281, it sets the same after the mean opposition, do you not see that, if this Epact were to migrate from a higher place into a lower one, the 14th moon would here be set back further, but there be forced out of its proper place? The same happens in other years too.

And so it ought not to seem absurd that, within the span of 3418 years — namely from the year 1582 to the year 5000 — in those few years recited above Easter is celebrated somewhat earlier than the Canons prescribe, since this can be avoided in no cycle. To make this plainer, let us examine the cycle of the golden number, which the Fathers approved in the Council of Nicaea. If it be brought level for 300 years after the Council of Nicaea — that is, 300 years after the year 325 — so that the individual golden numbers are advanced upward by one day (so that the lunations then fall one day earlier), you will indeed see how often it errs in anticipating the 14th moon — if that is to be called an error which no cycle can avoid. The following table will show this plainly, in which the 14th moons are marked as if the golden numbers in the ancient Calendar of the Council of Nicaea had risen by one day, exactly as they are arranged in the last of those 30 Calendars described in chapter 15, under the small letter *a*.

Table: the golden-number 14th moons raised by one day, against the mean oppositions (folios 502–503)

Columns as printed: **Anni Domini** | **Aurei Numeri** (golden number) | **Lunæ xiiij. si aurei num. Concilii Nicæni sursum ascendant** (the 14th moon, if the golden numbers of the Council of Nicaea rise upward — day · month) | **Oppositiones mediæ / D. H.** (mean oppositions — day · hour · month). Parsing note: in the last column the first figure is the day of the month (D), the second the hour (H), followed by the month; e.g. "5. 23 Aprilis" = 5 April, hour 23.

Anni Domini	Aurei Numeri	Lunæ xiiij. (raised)	Oppositiones mediæ (D · H)
627	1	4. Aprilis	5. 23 Aprilis
628	2	24. Martij	25. 8 Martij
630	4	1. Aprilis	2. 15 Aprilis
631	5	21. Martij	22. 23 Martij
635	9	6. Aprilis	7. 12 Aprilis

Anni Domini	Aurei Numeri	Lunæ xiiij. (raised)	Oppositiones mediæ (D · H)
639	13	23. Martij	24. 12 Martij
646	1	4. Aprilis	5. 16 Aprilis
647	2	24. Martij	26. 1 Martij
649	4	1. Aprilis	2. 7 Aprilis
650	5	21. Martij	22. 16 Martij
651	6	9. Aprilis	10. 13 Aprilis
655	10	26. Martij	27. 13 Martij
665	1	4. Aprilis	5. 8 Aprilis
666	2	24. Martij	25. 17 Martij
667	3	12. Aprilis	13. 15 Aprilis
669	5	21. Martij	22. 8 Martij
671	7	29. Martij	30. 15 Martij
685	2	24. Martij	25. 10 Martij
686	3	12. Aprilis	13. 7 Aprilis
687	4	1. Aprilis	2. 16 Aprilis
703	1	4. Aprilis	5. 18 Aprilis
706	4	1. Aprilis	2. 9 Aprilis
707	5	21. Martij	22. 18 Martij
709	7	29. Martij	31. 11 Martij
711	9	6. Aprilis	7. 6 Aprilis
715	13	23. Martij	24. 6 Martij
722	1	4. Aprilis	5. 10 Aprilis
723	2	24. Martij	25. 19 Martij
724	3	12. Aprilis	13. 16 Aprilis
726	5	21. Martij	22. 10 Martij
727	6	9. Aprilis	10. 8 Aprilis
728	7	29. Martij	31. 4 Martij
731	10	26. Martij	27. 8 Martij
742	2	24. Martij	25. 11 Martij
743	3	12. Aprilis	13. 9 Aprilis

Anni Domini	Aurei Numeri	Lunæ xiiij. (raised)	Oppositiones mediæ (D · H)
747	7	29. Martij	31. 20 Martij
763	4	1. Aprilis	2. 10 Aprilis
766	7	29. Martij	31. 13 Martij
779	1	4. Aprilis	5. 12 Aprilis

In all these years, then, you see the 14th moons so far anticipate the mean oppositions that, were the day immediately following a Sunday, Easter would fall before the mean opposition — and indeed in the years 647, 709, 728, 747, 766 by more than a whole day. I have passed over those years in which the mean opposition falls on Easter day before sunset, even if it falls after noon, since this ought not to be reckoned to conflict with the Canons. I have set down only those years which have the mean opposition on Easter day after sunset — such as our fifteen years above. Our cycle of Epacts, therefore, cannot justly be faulted without the cycle of the golden number of the Council of Nicaea being condemned along with it (and indeed more justly). [Margin: That the same error in the 14th moons which is found in the cycle of Epacts is detected in the cycle of the golden number when it has been advanced to a higher place.] For although in the aforesaid 39 years the Dominical letter usually amends the error of the 14th moon — because it does not immediately follow the 14th moon — this nonetheless does not wholly excuse the cycle from showing the Paschal 14th moons wrongly by its very nature. In these 8 years, at any rate — 627, 647, 651, 671, 715, 722, 742, 766 — the Dominical letter does not remove this error, but Easter is celebrated in them before the mean full moon, just as in our 15 years above.

If, then, this error of Easters occurs in the cycle of the golden number within the span of 153 years — those reckoned inclusively from the year 627 to the year 779 — why should we take it ill that the same error is committed in 15 years within the span of 3418 years, namely from the year 1583 to the year 5000 inclusive? Surely the difference is no small one, between 8 years and 153, and between 15 years and 3418. For, to make the proportion equal, an error of 15 years would have to be committed in 287 years, if an error of 8 years is detected in 153. [Margin: That the same error which is noted in the Epacts is detected in the same cycle of the golden number at the time of the Council of Nicaea.]

5. But come now: if you are not yet fully satisfied, let us examine a little more closely that same cycle at the very time of the Council of Nicaea — the cycle

which most people (only out of a wish to disparage) prize more highly than our cycle of Epacts. I for my part note more faults in it than in the Epacts, if we consider the nature of the 14th moons, according to which they ought to precede the mean oppositions by not more than one day, lest, should the following day chance to be a Sunday, we be compelled to keep Easter before the mean full moon, as we wrote in chapter 18, Num. 4. Look, then, at the following table.

Caput XXII (conclusion)

[Table of the years around the Council of Nicaea, showing for each year the golden number, the 14th Moon as reckoned by the Council of Nicaea (day and month), and the mean opposition of Sun and Moon (day, hour, and month).]

Anni Domini	Aurei Numeri	Lunæ xiiij. Concilij Nicæni (day · month)	Opposition. med. — D.	Hmon . th
323	1	5. Aprilis	6.	2 Apri 3 lis
324	2	25. Martij	26.	8 Mar tij
326	4	2. Aprilis	3.	1 Apri 4 lis
327	5	22. Martij	23.	2 Mar 3 tij
331	9	7. Aprilis	8.	1 Apri 1 lis
335	13	24. Martij	25.	1 Mar 1 tij
342	1	5. Aprilis	6.	1 Apri 5 lis
343	2	25. Martij	27.	0 Mar tij
245 [recte: 345]	4	2. Aprilis	3.	6 Apri lis
346	5	22. Martij	23.	1 Mar 5 tij
347	6	10. Aprilis	11.	1 Apri 3 lis

Anni Domini	Aurei Numeri	Lunæ xiiij. Concilij Nicæni (day · month)	Oppofition. med. — D.	Hmon . th
351	10	27. Martij	28.	1 Mar 3 tij
361	1	5. Aprilis	6.	8 Apri lis
362	2	25. Martij	26.	1 Mar 7 tij
363	3	13. Aprilis	14.	1 Apri 4 lis
365	5	22. Martij	23.	8 Mar tij
367	7	30. Martij	31.	1 Mar 4 tij
380	1	5. Aprilis	6.	1 Apri 3 lis
381	2	25. Martij	26.	9 Mar tij
382	3	13. Aprilis	14.	7 Apri lis
383	4	2. Aprilis	3.	1 Apri 6 lis
386	7	30. Martij	31.	7 Mar tij
399	1	5. Aprilis	6.	1 Apri 7 lis
402	4	2. Aprilis	3.	8 Apri lis
403	5	22. Martij	23.	1 Mar 7 tij
418	1	5. Aprilis	6.	9 Apri lis
419	2	25. Martij	26.	1 Mar 8 tij
422	5	22. Martij	23.	9 Mar

Anni Domini	Aurei Numeri	Lunæ xiiij. Concilij Nicæni (day · month)	Opposition. med. — D.	Hmon . th tij

In these 28 years within a span of 100 years you can see the 14th Moon anticipating the mean oppositions by a greater interval than is proper — so much so that on the following day, if it happened to be a Sunday, Easter would be celebrated before the mean full moon. For although the Dominical letter usually does not fall immediately after the 14th Moon, and so mends and corrects that error, still such 14th Moons are by their very nature faulty, since they occur nearly two days before the mean oppositions. I have passed over very many other years in which the mean oppositions occur before sunset; for in those cases the day of Easter, if it were kept immediately after the 14th Moon, would in some measure reach the mean full moon — and that seems to be enough. I have recorded only those years in which the mean full moon falls after sunset, as we did in the preceding cases as well.

From all this I think it sufficiently confirmed that in every cycle, whatever it may be, the Paschal 14th Moons are sometimes marked in the Calendar earlier than the mean oppositions than they ought to be; and it is therefore no wonder that the same thing happens in the epact cycle of the new Calendar. Those who harass it so violently, and try to make it hateful to everyone, are labouring in vain — in vain, I say, since no cycle can be free of every fault, as we have often remarked, and since far fewer errors are found in our epact cycle than in the other cycles. This is clear from what we have said, and anyone can easily verify it for himself by examining any other cycle whatever and comparing the 14th Moons of our own cycle with it. I did just this myself not long ago, when I examined the calendrical scheme of a most ingenious mathematician — one he believed to be perfectly accurate, and certainly far superior to this Gregorian one — in which, as the saying goes, he went wholly astray from the heavens. For I found countless absurdities in it, nearly all of which are avoided in our own scheme.

[Margin: *Quare nihil hic dicatur de indictione.* — Why nothing is said here about the indiction.] It would remain now to treat of the Indiction; but since we have said more than enough about it in the new Roman Calendar, which we set out at the beginning of the work, and shall say more in the Ecclesiastical Computus, which will follow this work, nothing seems to need saying about it in this place.

CAPVT XXIII.

That the most holy Passover [Easter] is to be celebrated on one and the same day in all parts of the world.

Some raise doubts about the time of year at which the most holy Easter should be celebrated by those who inhabit the other hemisphere, toward the southern region from the Equator, and have the Antarctic pole visible above their horizon. For since the precept is that we observe the spring season — when the Sun, having crossed the Equator, moves more and more toward our regions and daily draws nearer to us — if those peoples were to keep Easter at the same time as we do, they would surely be celebrating it in the opposite season of the year, namely when the Sun is receding further and further from them, and in the very season of autumn; for among them it is autumn at the time when spring is present for us. Add to this that the Lenten fast is highly inconvenient and burdensome for them, because it falls among them at the end of summer, when the greatest heat still prevails. Nevertheless it must be said, briefly, that all Christians ought to celebrate Easter in the same month and on the same day as the Roman Church celebrates it, according to the decree of the Sacred Council of Nicaea and of the first Council of Arles — in which, as is found in *De consecratione*, Distinction 3, chapter *De observatione*, it is thus laid down: "*We ordain that Easter be observed on one day and at one time throughout the whole world.*" And the same was enacted in the Fourth Council of Carthage, as is found in the same Distinction, in these words: "*The solemnity of Easter is to be celebrated on one day and at one time.*" The same is attested by St Ambrose in Epistle 83, addressed to the bishops appointed throughout Aemilia, where he writes as follows about this same Paschal solemnity — as we also reported above in chapter 1, Num. 4:

"It is a matter of no ordinary wisdom to determine the day of the Paschal celebration. Both divine Scripture instructs us in this, and the learning of our forefathers, who, coming together at the Council of Nicaea — among those Decrees of the Faith that were as true as they were admirable — and treating also of the celebration just mentioned, when the men most skilled in calculation had been gathered, worked out the reckoning of nineteen years and established, as it were, a certain cycle, from which a pattern might be produced for the remaining years. This cycle they called the [Greek: ἐννεαδεκά(?)ῖδα ("nineteen-year period"); the middle cluster of the printed form does not resolve] — following this principle: that we ought not to waver in some empty opinion over a celebration of this kind, but that, once the true reckoning has been ascertained, the resolve of all should so concur

that on one and the same night everywhere the sacrifice for the Lord's Resurrection may be offered."

Nor is it any objection that for them Easter falls in September. For the holy Easter is celebrated in memory of the death and Resurrection of our Lord Jesus Christ, who willed to undergo death in this region of our world — that is, in the northern hemisphere — at the season of our vernal equinox, and to rise again from the dead. This feast, therefore, they all ought to celebrate at the time at which he willed to rise from the dead. But if for the southern peoples the Lenten fast should prove too laborious and burdensome on account of the season of the year, they will be able to obtain from the Supreme Pontiff that he grant them the eating of dairy foods and of other things, as necessity may advise.

2. Nor indeed is this hindered by the diversity of meridians. For since the Sun is carried from its rising to its setting in the space of 24 hours, all will be able within that span to have the Lord's Day in succession — some earlier, others later — on which they may celebrate the day of the holy Easter in honour of the Resurrection of our Lord Jesus Christ; whom, now that I have at last, at some point, been brought forward to the completion of the work I undertook — not with any boasting — I honour and revere, as is right. He it was who furnished me the strength to bear a most heavy burden; he who suffered light to be drawn from his own light, if any light has been brought to a matter so very obscure. Whatever, therefore, right and divine law demands — whatever of strength or of years remains to me — this we consecrate to him, mindful of the benefit received, reckoning it will stand to us in place of a vast reward if our labours, undertaken as they always have been, may likewise turn to his glory and to some benefit for the Christian Commonwealth.

CAPVT XXIIII.

THE CALENDAR OF FRANÇOIS VIÈTE [Franciscus Vieta] IS EXAMINED AND REFUTED.

1. I had already, by God's good help, finished this book, and had resolved to send it to the press very shortly, when — behold — there came into my hands a book on the Calendar by François Viète, a most learned Frenchman, marked with this title: [Margin: *Inscriptio Calendarij Vietæ*. — The title of Viète's Calendar.]

A Report on the truly Gregorian Calendar, addressed to the ecclesiastical doctors, presented to the Supreme Pontiff Clement VIII in the Jubilee Year of Christ 1600.

This book (as appears on its final page) was printed at Paris by Jean Mettayer [Ioannes Mettayer], royal printer. To it, as a kind of appendix, a Perpetual Gregorian Calendar is attached — one that was also issued separately and is wholly anonymous, with no mark of country, or of family (that is, of the author) and of the printer appended to it; made almost after the form and pattern of that Calendar which Gregory XIII saw to be printed and publicly issued in the year 1582. He wrote up in that book many excellent things indeed (as befits a man of great genius), and disputed admirably about the whole scheme of the Calendar. And yet, being human, he did a human thing in himself falling into error: for, having abandoned the arrangement of the epacts set out in the Gregorian Calendar

— and having neglected the beginning of the year, which the Roman Church, treading in the footsteps of Julius Caesar [Iulius Caesar], derives from the month of January — he devised a certain new scheme of the epacts, and distributed them among the days of the month in a new fashion, following no precedent; and he held that the year should truly begin, under his own auspices, from the eighth day of March. His chief reason (as he asserts) was this: to prevent the Lunar months, in a bissextile year, from ever comprising 31 days on account of the intercalary day added to February — a thing which, however, is not absurd, as will be shown shortly. On the contrary, indeed, while he strives to avoid this inconvenience, he imprudently entangles himself in far greater difficulties by following that new placement of his epacts. For, as will become plain in its proper place, that man — acute though he otherwise is — does not see that sometimes even by his own reckoning, and even outside a bissextile year, a Lunar month of 31 days is made up, and that several months are reckoned at only 28 days, or even at 27. How far all these depart from the true reckoning, and how monstrous and disordered [Greek: ἄτακτα (ataxta, "disordered, irregular things")] they are, he will himself testify — he who detests such months as portents.

Now then, before I pursue the rest, I shall set his Calendar itself before your eyes, so that what we have found wrongly arranged in it may be more clearly perceived. Then briefly I shall dispose of the objections he raises against our Calendar. Finally I shall weigh his epacts, so far as concerns the 14th Moons, and shall show that they are for the most part false. But Viète himself I beg and beseech to interpret in a kinder sense this defence, which I have undertaken for the sake of truth. For it is not out of hatred for the man, whose genius I admire; not out of envy of his name, whose writings I hold in respect; not out of any zeal for contention, from which I have always recoiled; not out of desire for glory, whose nature I have long since contemplated in the light of truth — I set little

store by a shadow in the peddling of learning. Rather, it is by duty, by fairness, and by the good faith with which I once took up this cause that I am brought to refute his Calendar and to defend the Gregorian one.

[Margin: *Vietæ comminisci nouam Epactarum collocationem nouumque anni principium*. — Viète contrives a new arrangement of the epacts and a new beginning of the year.]

THERE FOLLOWS

A View of the Gregorian Calendar according to the opinion of Viète.

Caput XXIII (continued)

A View of the Gregorian Calendar according to the opinion of Viète (continued)

The following three leaves (folios 507–509) set out, month by month, Viète's proposed re-arrangement of the calendar. Each month is tabulated in three columns:

- **Dies confecti** — the day of the (civil) month, 1–31.
- **Dies Vietæ** — "Viète's day," a continuous day-count running through the whole reckoning; it does **not** restart at each month but at Viète's own year-beginning (marked *initium* within March).
- **Epactæ Vietæ** — "Viète's epact" for that day, a lunar age running down 29, 28, ... 1, then the epact-30 marker, then 29 again.

The day-of-month ruler (*Dies confecti*) is printed only against the leftmost month of each opening (January, May, September); it governs the other three months of the opening through the continuous *Dies Vietæ* count.

◆ = Viète's epact-30 marker, a solid black lozenge (the counterpart of the Gregorian epact-30 asterisk * and the *Compendium*'s circular ☉). It recurs every 59 days (two lunations) — at *Dies Vietæ* 30, 89, 148, 207, 266, 325 — and is transcribed as printed wherever it appears.

Folio 507 — Ianuarius, Februarius, Martius, Aprilis

Ianuarius (January)

Dies confecti	Dies Vietæ	Epactæ Vietæ
1	300	xxv
2	301	xxiiii
3	302	xxiii
4	303	xxii
5	304	xxi
6	305	xx
7	306	xix
8	307	xviii
9	308	xvii
10	309	xvi
11	310	xv
12	311	xiiii
13	312	xiii
14	313	xii
15	314	xi
16	315	x
17	316	ix
18	317	viii
19	318	vii
20	319	vi
21	320	v
22	321	iiii
23	322	iii
24	323	ii
25	324	i
26	325	◆
27	326	xxix
28	327	xxviii

Dies confecti	Dies Vietæ	Epactæ Vietæ
29	328	xxvii
30	329	xxvi
31	330	xxv

Februarius (February)

Dies Vietæ	Epactæ Vietæ
331	xxiiii
332	xxiii
333	xxii
334	xxi
335	xx
336	xix
337	xviii
338	xvii
339	xvi
340	xv
341	xiiii
342	xiii
343	xii
344	xi
345	x
346	ix
347	viii
348	vii
349	vi
350	v
351	iiii
352	iii
353	ii
354	i
355	xxix

Dies Vietæ	Epactæ Vietæ
356	xxviii
357	xxvii
358	xxvi

Martius (March)

Dies Vietæ	Epactæ Vietæ
359	xxv
360	xxiiii
361	xxiii
362	xxii
363	xxi
364	xx
365	xix
initium 1	xxix
2	xxviii
3	xxvii
4	xxvi
5	xxv
6	xxiiii
7	xxiii
8	xxii
9	xxi
10	xx
11	xix
12	xviii
13	xvii
14	xvi
15	xv
16	xiiii
17	xiii
18	xii

Dies Vietæ	Epactæ Vietæ
19	xi
20	x
21	ix
22	viii
23	vii
24	vi

Aprilis (April)

Dies Vietæ	Epactæ Vietæ
25	v
26	iiii
27	iii
28	ii
29	i
30	◆
31	xxix
32	xxviii
33	xxvii
34	xxvi
35	xxv
36	xxiiii
37	xxiii
38	xxii
39	xxi
40	xx
41	xix
42	xviii
43	xvii
44	xvi
45	xv
46	xiiii

Dies Vietæ	Epactæ Vietæ
47	xiii
48	xii
49	xi
50	x
51	ix
52	viii
53	vii
54	vi

Folio 508 — Maius, Iunius, Iulius, Augustus

Maius (May)

Dies confecti	Dies Vietæ	Epactæ Vietæ
1	55	v
2	56	iiii
3	57	iii
4	58	ii
5	59	i
6	60	xxix
7	61	xxviii
8	62	xxvii
9	63	xxvi
10	64	xxv
11	65	xxiiii
12	66	xxiii
13	67	xxii
14	68	xxi
15	69	xx
16	70	xix
17	71	xviii
18	72	xvii
19	73	xvi

Dies confecti	Dies Vietæ	Epactæ Vietæ
20	74	xv
21	75	xiii
22	76	xiii
23	77	xii
24	78	xi
25	79	x
26	80	ix
27	81	viii
28	82	vii
29	83	vi
30	84	v
31	85	iiii

Iunius (June)

Dies Vietæ	Epactæ Vietæ
86	iii
87	ii
88	i
89	◆
90	xxix
91	xxviii
92	xxvii
93	xxvi
94	xxv
95	xxiiii
96	xxiii
97	xxii
98	xxi
99	xx
100	xix
101	xviii

Dies Vietæ	Epactæ Vietæ
102	xvii
103	xvi
104	xv
105	xiiii
106	xiii
107	xii
108	xi
109	x
110	ix
111	viii
112	vii
113	vi
114	v
115	iiii

Iulius (July)

Dies Vietæ	Epactæ Vietæ
116	iii
117	ii
118	i
119	xxix
120	xxviii
121	xxvii
122	xxvi
123	xxv
124	xxiiii
125	xxiii
126	xxii
127	xxi
128	xx
129	xix

Dies Vietæ	Epactæ Vietæ
130	xviii
131	xvii
132	xvi
133	xv
134	xiiii
135	xiii
136	xii
137	xi
138	x
139	ix
140	viii
141	vii
142	vi
143	v
144	iiii
145	iii
146	ii

Augustus (August)

Dies Vietæ	Epactæ Vietæ
147	i
148	[blank in print — ♦ (epact 30) expected here; see anomaly note]
149	xxix
150	xxviii
151	xxvii
152	xxvi
153	xxv
154	xxiiii
155	xxiii
156	xxii
157	xxi

Dies Vietæ	Epactæ Vietæ
158	xx
159	xix
160	xviii
161	xvii
162	xvi
163	xv
164	xiiii
165	xiii
166	xii
167	xi
168	x
169	ix
170	viii
171	vii
172	vi
173	v
174	iiii
175	iii
176	ii
177	i

Folio 509 — September, October, November, December

September (September)

Dies confecti	Dies Vietæ	Epactæ Vietæ
1	178	xxix
2	179	xxviii
3	180	xxvii
4	181	xxvi
5	182	xxv
6	183	xxiiii
7	184	xxiii

Dies confecti	Dies Vietæ	Epactæ Vietæ
8	185	xxii
9	186	xxi
10	187	xx
11	188	xix
12	189	xviii
13	190	xvii
14	191	xvi
15	192	xv
16	193	xiiii
17	194	xiii
18	195	xii
19	196	xi
20	197	x
21	198	ix
22	199	viii
23	200	vii
24	201	vi
25	202	v
26	203	iiii
27	204	iii
28	205	ii
29	206	i
30	207	◆
31	(blank)	(blank)

October (October)

Dies Vietæ	Epactæ Vietæ
208	xxix
209	xxviii
210	xxvii
211	xxvi

Dies Vietæ	Epactæ Vietæ
212	xxv
213	xxiiii
214	xxiii
215	xxii
216	xxi
217	xx
218	xix
219	xviii
220	xvii
221	xvi
222	xv
223	xiiii
224	xiii
225	xii
226	xi
227	x
228	ix
229	viii
230	vii
231	vi
232	v
233	iiii
234	iii
235	ii
236	i
237	xxix
238	xxviii

November (November)

Dies Vietæ	Epactæ Vietæ
239	xxvii

Dies Vietæ	Epactæ Vietæ
240	xxvi
241	xxv
242	xxiiii
243	xxiii
244	xxii
245	xxi
246	xx
247	xix
248	xviii
249	xvii
250	xvi
251	xv
252	xiiii
253	xiii
254	xii
255	xi
256	x
257	ix
258	viii
259	vii
260	vi
261	v
262	iiii
263	iii
264	ii
265	i
266	◆
267	xxix
268	xxviii

December (December)

Dies Vietæ	Epactæ Vietæ
269	xxvii
270	xxvi
271	xxv
272	xxiiii
273	xxiii
274	xxii
275	xxi
276	xx
277	xix
278	xviii
279	xvii
280	xvi
281	xv
282	xiiii
283	xiii
284	xii
285	xi
286	x
287	ix
288	viii
289	vii
290	vi
291	v
292	iiii
293	iii
294	ii
295	i
296	xxix
297	xxviii
298	xxvii

[Resuming prose, foot of folio 509]

Below the double ornament band the discursive text resumes: a paragraph of some thirteen lines of small italic, running to just above the vu 3 signature. It continues Clavius's critique of Viète's epact-placement, testing it against the golden numbers and the Gregorian epacts.

[Margin: *Pag. 6. Num. 12. tab. 2.*]

... vel quod illa non ignorantur: vel qu[?] aliqua Calendarij [?] Ægyptiorum [?] primo tabella Can[?] Canon 2. Calendarij [?] locum. Cur igitur [?] dimidiati respondeant, necess[?] Hoc autem ad vnicam in Epacta [?] est. Nam anni, verbi gratia, [?] or est Epacta vj, vel xxvj [?] pag. 10. [?] cingere Epactam. Ho[?] men vltra in propria [?] Canon 2. Calendarij [?] Epacta xxvj, & ita v[?]bilitatem [?] potest. [?] vtilitatibus [?]

"... or because those things are not unknown; or because [?] some [table] of the Calendar [?] of the Egyptians [?] the first table of the Canon [?] Canon 2 of the Calendar [?] place. Why then [?] the halved [?] should correspond, it is necessary [?] But this, to a single [?] in the epact [?] For the years, for example, [?] ... is the epact 6, or 26 [?] page 10 [?] to encompass the epact. This [?] beyond, into its own [?] Canon 2 of the Calendar [?] epact 26, and thus [?] ...ability [?] can be. [?] uses [?]"

And so this is my specimen of a Calendar which — as I said at the outset — Viète took care to have printed separately from his *Relatio*, following more or less the same plan by which the Gregorian Calendar, published in the year 1582, was received with such wide popular assent and such approval from learned men. In this I should not want anyone to fault me, as though in less than perfectly good faith I had thought that, once the epacts and the days of the months were retained, the Dominical letters, the Kalends, the Nones, and the Ides might be neglected. For since Viète himself does not depart from common usage in these very items, why should I have delayed my pen — hurrying on toward matters of far greater weight and moment — over transcribing them? I have, however, also inserted the days of the whole year, whose beginning Viète draws from the eighth day of March, even though these very days are not found written out in Viète's separately printed Calendar.

2. Now, since Viète so glories in this Calendar of his that he does not hesitate to call it truly Gregorian — and dares, by way of a certain contempt (as it seems), to give the label "common" to what Gregory XIII himself, after long deliberation, approved and labored greatly to have accepted by the whole Christian world — it is necessary that the matter be examined by me a little more closely, and that it be shown that this Calendar of Viète's is as far removed as anything possibly can be from the Gregorian, that is, from the true one. I see indeed how arduous a province I am undertaking, and I already perceive how hard it will be to win Viète's assent, since he seems to himself to have wholly grasped the very mind of Gregory — by whom, however, he was not only not called into counsel over the Calendar, but perhaps never even heard or seen. Yet I, who know that Gregory's genius (if one may put it so) did not pass over into Viète, am confident it will easily come about that anyone may understand this: our common Calendar can be called "common" on this ground alone, that it does not depart from the now-inveterate usage of the whole Church and from the common judgment of mankind; whereas what Viète has proposed stands utterly at odds with the mind of Gregory, with the opinion of right-thinking men, and finally with the most holy decrees of the Fathers and of the Councils.

[Margin: A bold crime of Viète's, in printing the Calendar separately together with Gregory's bull.]

First of all, then, Viète is convicted of having gravely erred in this: that he took care to have that Calendar of his — for to me it will never be the Gregorian — printed separately on his own authority, in exactly the same words in which the Gregorian appeared in 1582 by Pontifical authority (a few things excepted, which he evidently judged foreign to his own design); and moreover that he prefixed Gregory's Bull to lend it authority, so that those who bought that little book, and, deceived by it, should use it thereafter, might seem to have done so in accordance with Gregory's judgment, and thus to have obeyed the authority of the Apostolic See — when in fact, as I shall demonstrate in what follows, nothing is more opposed to the Gregorian Calendar.

[Margin: That there is no necessity for the year to begin from March 8.]

3. But leaving aside this offense — whatever kind of crime it is, and it is certainly no light one — let us come to those faults that seem to touch the matter more nearly. Viète begins — this new Sosigenes (for by this name he ironically [Greek: εἰρωνικῶς, *eirōnikōs*, "ironically" — the middle vowel is at the ink-spread limit, but the sense is secure] styles the correctors of the

Calendar, professing that he himself will deliver the very things Gregory had expected from his own Sosigeneses) — he begins, I say, the year from the eighth day of March. I do not ask at present how many and how absurd are the things that flow from this novel starting-point of the year. What, I ask, was the reason for drawing the beginning of the year, on no precedent, from the eighth day of March? What compelled him to introduce a new and unheard-of custom? I marvel that a man so remarkably learned in mathematics does not see how great a disturbance must necessarily arise from this, since the beginning and end of all the remaining months must then be unknown. He will say that he set the eighth day of March as the beginning of the lunar months; I hear him. But the lunar year cannot always be begun from the eighth day of March — only when its epact is xxix. For if epact j. be assumed, the year will take its beginning from the fifth of April, and so on. In vain, then, is so great a disturbance and confusion of things brought in, when it would be enough — and far more expeditious — to say that the first Paschal month begins on the eighth day of March and the last on the fifth of April, even if the Cycle of Epacts does not begin from the eighth day of March; especially since, as I said, nothing compels it, and from this new arrangement many absurdities follow, which I shall point out a little further on. Meanwhile, most learned Viète, take here a sample of them.

[Margin: That Viète breaks the common rule for investigating the age of the Moon.]

This new arrangement of your epacts does not merely wrench aside, but shatters, that time-honored rule which for so many centuries the common folk have employed in tracking the age of the Moon by the epacts, the Kalends, and the days of the months. "But," you will say, "that rule is not wholly accurate, nor perfect in every respect." I grant it; yet it does not stray far from the reasoning of the Gregorian Calendar, since it errs at most by one day from the age of the Moon as indicated by the epacts, and not seldom agrees with it — which certainly cannot happen if the Cycle begins to be laid out on the eighth day of March, since on that plan Viète's epact disagrees with the Gregorian one every single year. But Viète, you see, relishes nothing common; he thinks that no account of the common practice should be taken in restoring the Calendar. I, however, would not wish to have the multitude angry with me, and I take no notice of those recondite and utterly — one might almost say — paradoxical [Greek: παράδοξα, *paradoxa*] notions that shrink from the common usage, that is, from the most ancient custom of the whole Church. Indeed, this very point can serve as an argument

that our epacts are rightly arranged in the Gregorian Calendar, since they so carefully preserve, in the tracking of the Moon's age, the nature of the epacts as they were in use before the correction.

[Margin: That Viète's epacts are truly not epacts.]

Since this is so, one might not unreasonably conclude that Viète's epacts are in reality not epacts at all, however they may be named — a conclusion to which I for my part would readily subscribe: either because by them the age of the Moon cannot be tracked from memory (a use which we know to be especially valuable), or because by this new arrangement of the epacts their very nature is utterly abolished. For consider: before the Calendar was reformed, the epacts described in the first table of Canon 2 of the Calendar corresponded with the golden numbers — which Viète too admits in his separately published Calendar. Since, then, through the correction ten days were removed from the year, it is necessary that the same golden numbers should be answered by epacts diminished by ten units, so that they may indicate that the New Moons now fall ten days later. And this has been observed to the letter in the Gregorian epacts, as can be seen from the second table of the same Canon 2 of the Calendar. For in the year, say, 1601, with golden number six, the epact xxvj. corresponds, which is ten units less than epact vj. — or xxxvj. —

which before the correction corresponded to the same golden number 6; and this epact xxvj. is written ten days below epact 6 in the Calendar. So too in the year 1602, golden number 7, the epact vij. corresponds, which is likewise ten units less than the epact xvij. that before the correction answered to golden number 7; and this same epact vij. is placed ten days below epact xvij. And the same is seen in all the rest. Why, then, in the year 1601 does Viète thrust upon us epact ij., only four units less than epact vj. and placed only four days below epact vj.? Why in the year 1602 does he propose to us epact xij., likewise only four units less than epact xvij. and set only four days below epact xvij.? Surely, if by such a procedure the nature of the epacts is preserved, I should be glad to be taught by Viète, at whatever price, what it would then mean to alter and pervert that nature.

Furthermore, the attentive reader will gather from this too that Viète's epacts do not know the nature of the epacts. The epacts are the numbers of days that remain over in the month of December after the last lunation of the year, as we handed down in Chapter 9, Num. 14 — and this Viète himself does not deny. This is seen to be observed perpetually and consistently in our Gregorian Calendar, so that from this very fact one may infer that the epacts stand rightly in it, since they so wonderfully agree in every part with the nature of the epacts. But what of

Viète's epacts — does not the opposite follow? Let him himself see, and teach us, if he can, that this is found in his epacts. For I find the contrary, which I show thus. When in his Calendar epact xix. is running, with any golden number less than 10, the last lunation of the year ends on the sixth of March, and one day is left over; and yet in the following year the epact, according to him, is not j. but xxix.

[Margin: That Viète's epacts are not equal to the days that remain over in December after the last lunation.]

Again, whenever epact xviiij. is in use, with whatever golden number then running, the last lunation of the year is closed on the seventh of March, and no day is left over; and yet in the following year epact 0. — or ♦ — is not employed, but xxix. Once more, when epact xx. exists with a golden number less than 19, the last lunation of the year is finished on the fifth of March, and two days remain over. Is the following year's epact therefore ij., as the law of the epacts requires? By no means, but j. Likewise epact xxj. ends the last lunation of the year on the fourth of March, and 3 days remain over; and yet, unless the golden number be 19, epact ij. — not iij. — is assigned to the following year. And the same may be observed in several other epacts. Who, then, would deny that the Gregorian epacts are more rightly arranged than Viète's, since in the former the nature and condition of the epacts is preserved, but not in the latter? And truly it is a most delightful thing (to speak with Viète) not to depart from the ancient reckoning of the epacts; for when that is kept, the days themselves that are left over after the last lunar month instruct us which epact we ought to assume for the following year — a thing which Viète's epacts can in no way provide, as has been shown. Farewell, then, my dear Viète, to that new arrangement of your epacts, which utterly destroys their very nature.

4. It is a great thing to have retained only the name of the epacts while abolishing their nature, as we have just said — a thing utterly foreign to Gregory's mind, which nevertheless (as it seems to him) Viète alone was able to accomplish. But this could be borne with on some ground. What cannot be borne — and what, even by Viète's own judgment, is portent-like and to be banished to the ends of the earth — is this: that from this unwonted arrangement of the epacts, in common years, when any one of these epacts is running — xvij. xvj. xv. xiiij. xiiij. xij. xj. x. ix. viij. vij. v. iij. iij. ij. j. — together with golden number 19, the lunar month beginning in February will have only 28 days.

[Margin: That many lunar months in Viète contain only 28 days.]

So it is, exactly, most learned Viète: this Calendar of yours, "truly Gregorian" and no "common" one, gives us — as it so repeatedly does — lunar months of only 28 days; and had you not yourself called the thing prodigious, I should truly labor to devise a word by which to name it. And I demonstrate it thus. Since you will have the golden number and the epact change on the eighth of March, and 12 must be added to the epact running with golden number 19 in order that the following epact, running with golden number 1, may be formed — as we too taught in Chapter 12, Num. 12 and 13, and as is established from the Cycle of Epacts directed to the golden number by you, on which see below, Num. 13 — it comes about that, when, for example, epact xvij. is running with golden number 19, and the New Moon accordingly falls on the eighth day of March, the epact of the following year is xxix., concurring with golden number 1, and the New Moon falls in March on the eighth day. Now it is established that from the 8th of February inclusive to the 8th of March exclusive only 28 days are counted, in a common year. And the same reckoning holds for the other epacts enumerated above. Do you perceive, then, most ingenious Viète, that in chasing after exotic novelties you attain neither the counsels of the most wise Pontiff nor even your own — since you so often bring in lunar months of 28 days, which nevertheless you execrate, and rightly so, as monsters and portents?

[Margin: That Viète makes several lunar months of only 27 days.]

I was preparing here to inquire, Viète, into some causes that might have led you to set up a new beginning in the Calendar; but that which — for your own sake — I should least have wished suddenly checked my pen. You understand, I suppose, how unfair a judge of the correctors of the Calendar you have shown yourself, in constituting lunar months, so often and against right and law, of only twenty-eight days. But these unwonted prodigies you not only bring forth, as I see, but, like the Giants of old, you assail heaven itself. This new inauguration of the lunar months — who would ever believe it, or wonder enough? — this new beginning of the year of yours, I say, exhibits several lunations of only twenty-seven days (O unheard-of and singular thing!). And lest you suppose this to be flung out too invidiously by us, see whether you approve of the following, which is truer. When epact xvj. is running, so that in your Cycle of Epacts directed to the golden number, golden number 3 answers to epact xix., the New Moon falls on the ninth day of February. If, then, the following year be a centennial one, in which the table of the equation of the epacts offers the superior letter — that is, an epact greater by one unit under golden number 3, namely xxj. — then to golden number j. of that centennial year the epact xxix. will correspond, as is established from that same Cycle of yours directed to the golden number. Now no one can be

ignorant that from the 9th of February inclusive to the 8th of March exclusive, where epact xxix. is placed, 27 days are counted. And the same occurs whenever any of these epacts — xv. xiiij. xiiij. xij. xj. x. ix. viij. vij. vj. v. iiij. iij. ij. j. — concurs with golden number 19 and one must ascend to the superior letter in the table of the equation. Go now, most acute Viète, and vaunt that "truly Gregorian" Calendar of yours; contend that you alone have seen more than all others! How I could wish that you had never, even on this account, turned your mind to the emendation of the Calendar — that I might not be forced, here and now, to expose the most shameful blunders of a man whose genius in mathematical matters I have always admired to this day. For what could be devised more shameful, or more discordant, in a Calendar

than to prescribe for the synodic month only 27 days? I see that this belongs to the nature of any cycle whatsoever: that when one must pass to the superior letter in the table of the equation, one day is taken away from the first lunation of the year. For this too is seen in our own Calendar, since in that case the first lunation of the year comprises only 29 days, which would otherwise be 30, and sometimes (although very rarely — namely four times up to the year 100000, in the years 15200, 38000, 60800, 83600) only 28.

[Margin: On account of the Moon's equation one day is either added to, or subtracted from, the first lunation of the year.]

This cannot happen unless either one day be added to, or one taken from, the first lunation of the year. But that in your Calendar some lunations are constituted of only 28 days — even though no change be made in the table of the equation, whenever, that is, golden number 19 concurs with the epacts enumerated above — this is very justly censured. And from this too it may be gathered that our Gregorian Calendar is by far more perfect and more excellent than yours.

[Margin: For what cause he so often constitutes a lunar month of 28 days, and sometimes of 27.]

And if you ask the cause why in your Calendar a lunation is so often constituted of 28 days — while in ours it is so rare, as we have said — understand that there is none other than that good "beginning" of yours (as you call it) from the eighth of March, and the faulty arrangement of your epacts. For because the Paschal months you make all of 30 days, and those preceding them, begun in February from these epacts — xvij. xvj. xv. xiiij. xiiij. xij. xj. x. ix. viij. vij. vj. — of only 29 days, it comes about that these same months, when golden number 19 is running, comprise only 28 days. This indeed happens in the years 3420. 3439. 3458. 3477.

3496. 3515. 3534. 3553. 3572. 3591. 3610. 3629. 3648. 3667. 3686. 3705. 3724. 3743. 3762. 3781. 3800. 3819. 3838. 3857. 3876. 3895. 3914. 3933. 3952. 3971. 3990. 4009. 4028. 4047. 4066. 4085. 4104. 4123. 4142. 4161. 4180. 4199. 4218. 4237. 4256. 4275. 4294. 4313. 4332. 4351. 4370. 4389. 4408. 4427. 4446. 4465. 4484. 4503. 4522. 4541. 4560. 4579. 4598. 4617. 4636. 4655. 4674. 4693. 4712. 4731. 4750. 4769. 4788. 4807. 4826. 4845. 4864. 4883. 4902. 4921. 4940. 4959. 4978. 4997 — that is, in the span of 3400 years, from the year 1600 to the year 5000, four times and eighty times [i.e. eighty-four times]; whereas among us that happens only four times in the span of 98400 years, from the year 1600 up to the year 100000, namely in the years 15200. 30800 [recte: 38000]. 60800. 83600, whose golden number is 1; and in the table expanded from the lower line one ascends to the upper. For on this account, in those 84 years of yours, a lunation is constituted that begins in February and ends in March with 28 days, even though no change be made in the equation of the epacts, but only on account of golden number 19 then running, which in March is for the first time changed among you into 1 — because, while any other golden number is running, that same lunation contains only 29 days. Hence it is clear that if in some centennial year the golden number in January and February is still 19, and one ascends from the lower line to the upper in the epacts (that is, when epacts greater by one unit are to be assumed), that same lunation would then be constituted of only 27 days — which is worse than any prodigy. This can never happen in our Calendar, since our first lunation of the year, ending always in January, is a full one of 30 days, and very rarely a hollow one of 29 days; whereas among you a golden number of 19 sometimes falls out, so that the ascent must be made, as has been said. Do you see, then, into what a labyrinth that new beginning of the year of yours casts you?

5. From these things it is established, unless I am mistaken, that the new inauguration of the lunar year introduced by Viète cannot have very happy outcomes, seeing that in the Calendar it breeds these prodigies, in every way detestable in the Church of God. Let us see what New Moons Viète could have, if he wished to draw the beginning of the year from the eighth day of March. So far as I gather from his own writings, I understand two things especially: the one chiefly, that unless the Cycle begins on the eighth of March, it will come about that the months of the calendar begin from the Kalends of January — the future case being that several lunar months begun in February in bissextile years should be of 31 days, on account of the intercalary day added, which seems prodigious even to Viète himself. And it would indeed be prodigious if 31 days were attributed to the days of one lunar month in the Calendar; but in the common Gregorian Calendar this is never found, since in it the lunar months contain 30 days, or 29

(except in the first month of the year). And on account of the intercalary day one lunation may sometimes comprise 31 days.

[Margin: Why it is not absurd that one lunation should contain 31 days in bissextile years.]

On account of the added intercalary day it is not to be considered absurd that a lunation should sometimes comprise 31 days, since that intercalary day is not noted in the Calendar. If Viète existed among us, he would agree — or, more gravely, on the authority of the ancient Fathers. For what seems absurd to you was not seen [as absurd] by the Fathers of the Council of Nicaea, nor by the Alexandrians, nor by Julius Caesar, among all of whom several months of the golden numbers contained 31 days in bissextile years. Nor do I judge it absurd that this intercalary day should be added to a lunar month, since — as I have said — a bissextile day is a thing added [from outside], and no disturbance arises from it in the Paschal months. Do you wish then to know, Viète, what the absurdity is? I will tell you in a word. You constitute lunar months, as you do, of 28 days in those years in which the Moon is out of the ordinary — indeed, greater than the equal by more than two days, when the equation of the Moon is applied twice extraordinarily, as appeared at Num. 4. And so much the more absurd is this — that a month of some 31 days should be constituted (all the more since you yourself affirm) — than that a lunar month should be distant 29 days, 12 hours, 44 minutes, 3 seconds; a distance of 28 or 27 days rather than 31, especially since, as has often been said, that 31st day is an added one in the bissextile year and comes from outside.

6. Truly, exceedingly absurd are the things I have just reviewed. What if I should demonstrate, Viète, that with the beginning of the Cycle set on the eighth of March, you can nevertheless by no reasoning escape sometimes constituting, in a bissextile year, a lunation of 31 days? You will change your opinion, and draw back the beginning of the year, with us, to the Kalends of January — so I suppose. Come, then, and turn your eyes and mind carefully hither with me.

[Margin: That Viète sometimes makes a lunation of 31 days in a bissextile year.]

In the year, say, 1647 (which is not far off), before the bissextile, your epact is j., placing the Paschal New Moon on the 5th of April, because the golden number of that year is 14 — which, falling in your Cycle of Epacts directed to the golden number, falls upon the sign ♦, or, as you call it, the Aeolic digamma [Greek: Ϝ (*digamma*), the archaic letter used as the numeral 6; printed here as ϜϜ] — and

therefore, by your prescription, epact j. must be assumed. But the New Moon in the following February, of the bissextile year 1648, falls on the 24th of February, over against the same epact j. Since, then, that same Cycle of Epacts of yours, directed to the golden number, indicates that in the following year, by golden number 15, the epact is xj., whose use begins on the 8th day of March, the Paschal New Moon will fall on the 26th of March. And who does not see that in the bissextile year 31 days are counted from the 24th of February inclusive (which then has 29 days) up to the 26th of March inclusive? Nor indeed, to defend yourself, can you say that in our year 1648 you do not intercalate,

on the ground that the February in which the intercalation is made by us belongs to your year 1647 — since you begin your year 1648 from 8 March. This, I say, you cannot maintain. For if you do not intercalate along with us in the February of that same year 1648 — even though it belongs to your preceding year 1647 — the greatest confusion will arise between leap years and common years. A year that with us would not be a leap year would with you be one, and the reverse. And this, I know, you will not concede but will frankly admit: that before your year 1648 — namely at the end of the year 1647 — you intercalate together with us. This is also gathered most plainly from the temporary table of movable feasts in the Calendar published separately, where in our leap years you employ the very same Dominical letters as we do. And when you do this, take care that the very reproach you level against us in your *Criticus* [Ch.] 7 does not fit you most aptly:

"But what are these little microcosms, Physicist — that I should be affected by chance before the event?" [Latin: *Quæ vero microcosmia hæc Physici, me à casu ante casum affici?* — Clavius quotes Viète's own taunt back at him; "microcosmia" as printed.]

For you apply the intercalation before the leap year — which is 1648 — in the preceding year 1647, whereas we apply it within the year 1648 itself, near its beginning, even though with you it is done at the year's end. And what, then, is this confusion and variety of the years? For my part I see no necessity in it, nor do I understand that any usefulness whatever flows from it. On the contrary, I recognize that the equinox is more correctly kept in its place if the day is intercalated at the beginning of the fourth year, as we do, than if it be done at the end of the fourth year, as you wish. [Margin: It is better for the equinox to be kept in its place if the intercalation is made at the beginning of the fourth year rather than at its end.] For the equinox, at the end of the third year, will have slipped toward the end of the month by at most 18 hours; and by the intercalary day added near the beginning of the fourth year it will fall back to the preceding day,

six hours before its former place, so that the equinox, toward the end of the month in that same fourth year, is restored to its seat. But with you, at the end of the fourth year, the equinox will be found rolled back toward the end of the month by a full 24 hours. And who would deny that one strays less by 18 hours than by 24? On this matter read, if you please, what I wrote in chapter 5, sections 18, 19, and 20.

There is no reason, then, for you to praise so highly that intercalation of yours, to be applied at the year's end. It is therefore settled and certain that in your final year, 1647, you set up a lunar month of 31 days. But you will perhaps say that this happens only once in your Calendar — indeed you seem to insist expressly on this, so that pardon for a single error may be granted you. See how mild my temper is: you plead away this fault easily. Granted that by your new way of beginning the year you were allowed to err once with impunity — but were you also permitted to do so a second time and more often, without penalty? If that be allowed, I appeal to you yourself, who call lunar months of 31 days "monstrosities." Come then, if you please, let us see whether you set up 31-day lunar months more than once. And I claim nothing beyond the truth: this always befalls you whenever, before the leap day, a golden number greater than 10 falls in your Cycle upon the letter $\varsigma\varsigma$ [Viète's epact sign, printed as a doubled hook and called by Clavius the "Aeolic digamma" (*Æolicum digamma*); transcribed here as $\varsigma\varsigma$], as appeared a little earlier. In the year 3099, for instance, which with you begins on 8 March, the golden number is 3 under the letter D, and your Epact is xxij, marking the Paschal new moon on 14 March; and at the year's close it marks the year's last new moon on 3 March. In the year 3100 the golden number will be 4 and the Epact iiij, [so that the golden number 3 then answers to it]; the new moon will therefore then fall on 3 April. Now count from 3 March inclusive up to 3 April, and you will find 31 days contained in that lunar month.

ITEM. Whenever the golden number 3 answers to the letter G (capital), the golden number 8 exhibits the Epact xxj. If, then, in the following year, because of the equation of the Moon, one must descend from G to F, the Epact j will answer to the golden number 9, and again that lunation will have 31 days: namely, as many as are counted from 5 March inclusive, where the Epact xxj is, up to 5 April exclusive, where the Epact j is placed.

RVRSVS. Again, when the letter C (capital) is in use — that is, when the Epact xxij answers to the golden number 3 — the Epact xxv will be owed to the golden number 6. If, therefore, in the following year one must descend to the letter B (capital), so that accordingly the Epact xxj answers to the golden number 3, the

golden number 7 will have the Epact v; and the lunation beginning on 1 March and ending on the last of March will comprise 31 days.

IDEM. The same happens when the golden number 18 answers to the Epact xxix, and so the new moon falls on 25 [February][?] [...]. This occurs when the golden number 3 answers to the Epact xiiij under p (small). For if in the following year one must descend to n (small) [...], the golden number 19 will require the Epact ix [...] of February, where the Epact xxix is found. It is plain [that from...] up to 28 March exclusive, where the Epact ix is placed, [31 days are counted].

Very many other examples of this kind could be adduced, which for brevity's sake I omit. From these it is certainly clear that your Calendar presents lunar months of 31 days. But see how far I am from being unfair to you, Viète: only allow yourself to be persuaded that the year's beginning was wrongfully displaced by you from the Kalends of January to 8 March, namely so that you might escape lunar months of 31 days — which, however, as you have seen, [...], so that you can in no way escape that inconvenience of the 31 days when, in the expanded table, the passage is made from one line to a lower one, as I openly and frankly acknowledged at chapter 18, section 8, and again toward the end of section 4.

7. It is too grave to be pardoned in you that, whether in a leap year or a common one, the Epact drawn from xix, concurring in your table with the golden number [...], [places] the year's new moon on 7 March. And because the Epact xix must then be taken in your Cycle as the sign ♦ [Viète's lozenge epact sign], as you wish, [...] in the following [year] the Epact xix is changed into [xx?], [...] and it is assigned to 7 April. Whichever of your [Epacts] I therefore adopt, see what an absurdity follows. For if I take the one prefixed to 7 March, two new moons will fall on two consecutive days, with no day intervening between them: [the one on 7 March, where] the Epact is xix, and the other on the 8th, where the Epact is xxix. But who ever constituted lunations of merely a single day? Who, save one who would abandon the beaten paths to follow new ones? If, on the other hand, I choose the Epact assigned to 7 April, then the lunar month beginning on 7 March and ending on 6 April will comprise 31 days — which is wholly monstrous and unheard of, since the thirty-first day does not come in from outside, as in the Gregorian Calendar in a leap year, but is in fact included within the number of days of the Calendar. Indeed, if this Epact xxix is chosen in April, where, I ask, is the Paschal new moon in that year? For my part I find none, since 7 April occupies the second day after the last Paschal term; and the Epact assigned to 8 March [...] cannot be assumed, lest no intervening day fall between two new

moons. But the most learned Viète, whom this absurdity did not escape, replies very acutely in proposition 27 that in this case both the year's last day, which for him is 7 March, and the first day of the following [year] share in one and the same new moon: so that (he says) from 8 March the reckoning of the Paschal full moon is, as usual, insti-

-tuted. But is this not to shuffle, or (to use your own words) to bring in a contrivance, and not simply to admit the fact as it is? Consider, I beg you, into what your new beginning of the year and your new arrangement of Epacts have driven you. What computist ever assigned two days of distinct new moons to one and the same new moon? Do not the precepts of your art plainly teach that a new moon always occurs where the year's Epact is found? Why, then, at the end of a year whose Epact is xix, should there not be said to be a new moon on 7 March, since the Epact xix is found written there? And why likewise, in the following year, should we not admit a new moon on 8 March, where the Epact xxix of that year is placed? Truly this ἀμφιβολία [Greek: ἀμφιβολία (amphibolia, "ambiguity")] is in no way to be tolerated. And if we grant you, as you wish, that the new moon is then to be set not on 7 March but on the 8th — are not 31 days counted, in a leap year, from 6 February up to 7 March inclusive? Therefore, like it or not, through your arrangement of Epacts you cannot at times avoid a synodic month of 31 days.

IDEM. Exactly the same will happen when the Epact xix answers to the golden number 18 — which occurs when the Epact iiij answers to the golden number 3. For if in the following year one must then descend, so that the Epact iiij answers to the golden number 3, the golden number 19 will have the Epact xxix, in your Cycle set against the golden number. Thus the same wholly absurd result follows.

PRAETEREA. What is still more intolerable: when the Epact xxv answers to the golden number 3, the golden number 8 will have the Epact xx, and the new moon will fall on 6 March. If, then, in the following year one must descend by one line, so that the Epact xxiiij answers to the golden number 3, the golden number 9 of this following year falls on ζς, or the sign ♦. The Epact xxix must therefore then be taken, by your precepts, and the lunar month beginning on 6 March and ending on the 7th of the same month will comprise only two days, since the next month begins on the 8th from the Epact xxix — which no one will deny is absurd. What counsel, then, will you take, my dear Viète, to free yourself from this difficulty? Will you say that, leaving aside the Epact xxix assigned to 8 March, the following one, affixed to 7 April, is to be taken? I think not. For besides that a new moon would then, against your precepts, not occur on 8 March, where the year's

Epact is placed, the lunar month beginning on 6 March and ending on 6 April would contain 32 days — which is worse than a monstrosity — and no new moon in that year would be Paschal. Or will you say that the two last days of the year, and likewise the first of the following one — that is, 6, 7, and 8 March — share in this case one and the same new moon, so that, namely, from 8 March the reckoning of the Paschal full moon is set up as usual? I can scarcely believe it. For not only would you rouse all the computists against you, who will not subscribe to so unusual a thing as it is to ascribe three days to a single new moon (since this is contrary to the laws of lunations), but a lunar month begun on 6 February and completed on 7 March, so that the Paschal new moon began on the 8th, would comprise 31 days in a common year and 32 in a leap year. Whichever way you turn, then, Viète, you see plainly into what straits you are cast on account of that "truly Gregorian" Calendar of yours.

[Margin: Viète sometimes sets up a lunation of only two days, or of 32.]

8. It is a most ancient and celebrated rule, handed down by all computists and indeed observed most accurately in our Gregorian Calendar, that the Epact of any year's successor is produced from a given year's Epact by adding 11 — unless the golden number of the preceding year was 19, for then 12 are added, the reason for which we set out in chapter 12, section 13; and unless one must perhaps pass from one line to a lower or a higher one in the expanded table, since then either only 10 or 12 are added, even though the golden number is not 19; or again 13, when the golden number is 19 and the higher line must be taken, as we wrote in chapter 12, section 14. This rule, kept sacred and inviolate by all down to this day, Viète simply breaks. For whenever the golden number is greater than 10 and, in his Cycle of Epacts set against the golden number, falls on the Epact of the sign $\blacklozenge$, or on the Aeolic digamma $\zeta\zeta$ — so that by his prescription the Epact j must be taken — only 10 are to be added, in order to form, in the Cycle of Epacts, the Epact xj following the Epact $\blacklozenge$ or $\zeta\zeta$, even though in the equation one need not descend to a lower letter. And when the Epact is xix, 12 must necessarily be added (even though the golden number is not 19, and one need not ascend to a higher letter in the equation), so that the Epact j is produced, which he directs to be used in place of the Epact $\blacklozenge$. Again, whenever the golden number is less than 11 and, in that same Cycle of Epacts set against the golden number, falls on the Epact $\blacklozenge$ or $\zeta\zeta$ — so that then, by his prescription, the Epact xxix must be received — 12 must again be added, although no ascent is made to a higher letter, so that the Epact xi, following the Epact of the letter $\zeta\zeta$ or the sign $\blacklozenge$, is produced in the Cycle of Epacts. And when the Epact is xix, only 10 must be added, though no descent is made to a lower letter, so that the Epact xxix is composed, which is to

be used in place of the Epact $\blacklozenge$ or $\varsigma\varsigma$. I pass over the fact that not rarely, when one must descend to a lower letter, only 9 must be added, as appeared at the end of section 7. Nor do I mention that 13 must be added when the golden number is 19 and the higher line must be taken — for this happens in our Cycle too, as we said a little before, since the equation of the Moon then necessarily requires it to be done so. But to what end, my dear Viète, all this great ἀταξία [Greek: ἀταξία (ataxia, "disorder, irregularity")], and moreover this inconsistency and ambiguity? How will the computist know whether 9, or 10, or 11, or indeed 12 are to be added to form the following Epact, unless he perpetually consults your Cycle of Epacts set against the golden number? The precepts of the art surely do not teach this. Is this to keep the decrees of the Fathers of the Council of Nicaea safe and inviolate, as you profess? For my part, throughout all antiquity I observe an incredible constancy in forming the Epacts, which we too have preserved inviolate, as is right, in the new Calendar — save in those cases we mentioned a little earlier, which indeed are perfectly well known and so cannot escape any computist.

9. I ask you besides, most learned Viète, what these six days of the year have done wrong — namely 26 January, 6 April, 4 June, 2 August, 30 September, and 28 November — that all new moons flee from them as from unlucky days; for in all eternity no new moon can fall on them by your reckoning, on account of the Epact of the letter $\varsigma\varsigma$, or the sign $\blacklozenge$, set against those days, in place of which you direct that either the Epact xxix written below that sign, or the Epact j noted above the same sign, is always to be taken. Is not this to be judged a rash assertion, in no way to be believed? For how can it be that a new moon may fall on every other day, but on those six none at all?

SED. But if I may also venture a guess at the cause of this, it seems to be that, since you shrank from a pairing of two Epacts assigned to the same day in six months, you were forced to strike out one of the 30 Epacts in six months, so that the lunations might be constituted alternately of 30 and 29 days. And you willed this [expunged] one to be $\varsigma\varsigma$, or $\blacklozenge$. Hence, if it were to mark a new moon whenever the golden number in the Cycle of Epacts set against the golden number fell upon it, the Paschal new moon would then occur on 6 April, outside the Paschal terms; and in the six months where it is not found, no new moon would be had — both of which are absurd. Since, therefore, it is also absurd to deprive certain days of new moons, we ought not to shrink from a pairing of two Epacts assigned to the same day: for by that device all absurdities are avoided, as can plainly be seen from our Calendar, especially if its Epacts are resolved into golden numbers, which we did in chapter 15 in the thirty Calendars.

10. A second reason seems to have moved Viète to assign the year's beginning to 8 March: namely that, this beginning laid down and the arrangement of Epacts established upon it, all the Paschal lunar months are full — that is, of 30 days. But what has this to do with the correct celebration of Easter? Would Easter be dislodged from its place if even one of those months, or indeed all of them, were hollow — that is, of 29 days? Certainly the Fathers of the Council of Nicaea did not think so, for they made all the Paschal months hollow, that is, of only 29 days; and this same thing we too accomplished most carefully in the new Calendar, with two months excepted, those of the Epacts xxiiij and 25, as was explained in chapter 10, section 9. [Margin: It is not necessary that the Paschal months be full; indeed it is contrary to the Fathers of the Council of Nicaea.] Moreover, lest seven lunations should be made of 30 days, we rejected the equation applied by the Epacts [sigil: ?] [the epact-30 sort of the 1577 *Compendium*; on the page it prints as a small solid, blotted rounded oval with a short flick at the left — **not** a circle enclosing a dot. No character is committed: the sort is too heavily blotted in this copy to identify] and xxix at the end of March in the Calendar transmitted to the Christian princes in the year 1577, and chose this other one, established in the new Calendar by the Epacts xxv and xxiiij on 5 April. With what face, then, can you say in proposition 29 that it has hitherto been the custom, not only among the Hebrews but among all other computists, to constitute the first month — that is, with you, the Paschal month — as full? Look to it. Or, at the time when the Council of Nicaea was convened — at the time, I say, when so great a harvest of the most upright and learned men flourished — was there no single method of computation? Or is Dionysius the Abbot, surnamed Exiguus [Dionysius Exiguus], easily the foremost computist of his age, to be held wholly contemptible — he who, in the year 532, to remove the seeds of discord between Greeks and Latins over the celebration of Easter, inscribed the Cycle of the Alexandrians, that is, of only 29 days, constituting those same Paschal months hollow? Or has the authority of those most weighty Fathers no weight with you? There is no reason, then, my dear Viète, to boast so greatly that you have made all the Paschal months full — unless perhaps it seems glorious to you to rescind the most wise decrees of the Council of Nicaea on this matter, which nevertheless the whole posterity of mankind has always deemed it most shameful not to venerate with the utmost zeal.

SED. But you did not foresee, I believe, that these full Paschal months would cast you into that labyrinth of so many lunations of 28 days, of which above, at the end of section 4, we conjectured [you would fall into]; otherwise you would doubtless have entered upon the beaten path of hollow Paschal months, together with the computists.

SCIO. I know indeed that all computists constituted the first lunar month, which always ends in January, as full; but at the same time I also know that they made all the Paschal months hollow. Our Calendar, then, agrees better with the doctrine of the computists than yours.

11. Let these things be noted in passing against the Viètan Calendar. For we shall point out several more absurdities a little further on, when we examine the Paschal fourteenth Moons alone, in which we shall show that he has committed notable errors — provided, however, that we first briefly reply to his [?] [a Greek word set in small italic: only the initial κ, a second letter (ε or ρ), an ι and an unresolved cluster can be made out, and the final vowel carries an inked grave; no reading is committed], with which he quite severely passes judgment on our Calendar. In the first place, then, he accuses the Gregorian Calendar of constituting the lunar months, beginning from 6 February up to the day of intercalation (if the year is a leap year), as of 30 days. But that this is not absurd we showed in section 5. Yet it is foreign to correct computation to constitute many months of only 28 days, and now and then a month of 31 days — all of which, described in your Calendar even where the equation-letter need not be changed, we showed Viète to do, in section 4. In our Calendar, however, no lunation described in the Calendar contains 31 days, but only 28 — if you except the first lunar month of the year, when, because there is a passage from a higher line to a lower and from a lower to a higher, the added intercalary day sometimes brings it about that a 30-day lunation contains 31 days, which nevertheless are not all noted in the Calendar; so that we may truly say that no month of the Moon in our Calendar is assigned 31 days, or 28, unless the equation of the Moon must be applied, as has been said.

DEINDE. Next he says that in the new Calendar there is a certain new moon of the year which, once given, does not yield the Paschal new moon, on account of the two Epacts 19 and xx assigned to the last day of December; and Viète seems to act in good faith. For although these two Epacts, 19 and xx, are assigned to the last day of December, yet both are not used in the same year, but only one; and which one that is, the precepts of the art teach most clearly, as is manifest from the expanded table and its equation. Indeed, at the end of December in the Calendar we taught most plainly when the Epact 19, placed beside the Epact xx, will be of use. And so, when the Epact 19 is to mark a new moon on the year's last day, there is no doubt that the Epact xix has thereby shown, in that year, the Paschal new moon on 12 March; whereas when the Epact xx marks a new moon on the last day of December, it is likewise manifest that the same Epact xx has already marked the Paschal new moon on 11 March in that same year. Where,

then, is that ἀμφιβολία [Greek: ἀμφιβολία (amphibolia, "ambiguity")] which Viète so greatly reproaches us with?

TERTIO. Thirdly, he argues to the same effect when he says that there are certain Paschal new moons which, once given, do not thereby yield the other new moons of the year. He brings forward two examples. The first is this. "Let there be given," he says, "a Paschal new moon on 4 April, and the year's golden number 12, or greater. The other new moons of the year are sought. The fourth of April exhibits a double Epact, 25 and xxvi. The former argues a new moon on 4 May, the latter on 3 May. But why I should choose this rather than that, the precepts of the art do not teach." The second example is this. "Let there be given again," he says, "a Paschal new moon on 5 April, and the golden number 11, or less. The other new moons of the year are sought. The fifth of April exhibits a double Epact, xxiiij and xxv. The former argues a new moon on 5 May, the latter on the 4th. But why I should choose that rather than this, the precepts of the art do not teach." Good God! Who would believe that Viète, a serious and learned man, could take delight in such trifles? Did we not show, more clearly than daylight, in chapter 10, that two Epacts

that two Epacts ascribed to the same day cannot both be in use within the same nineteen-year cycle? And did we not also, in that very place, instruct the reader of the Calendar in chapter 12 which of the two he ought to take together with the golden number of the year? Why then does he clamour that the principles of the art do not teach this?

QVARTO. He attacks the cycle of our Paschal new moons more or less as follows. "When the Cycle of the Paschal new moons is set out directly according to the standard of the golden number," he says, "those new moons do not advance by an equal and uniform progression." He proves it thus. Let the golden number be j , and let the Paschal new moon fall on March 22 — which will happen in the year 6802. Then, when the golden number is 8, that is, in the year 6809, the Paschal new moon will fall on April 4, according to the Cycle of Epacts set out directly against the standard of the golden number. Again, let the golden number of the year be j , and the Paschal new moon March 24 — which will occur in the year 7011. Then, when the golden number is 8, namely in the year 7018, the Paschal new moon will fall on April 5, from the same Cycle. Therefore, over an equal interval — 209 years (for that is the count both from 6802 to 7011 and from 6809 to 7018) — the new moon belonging to golden number j is advanced forward by two days, whereas the one belonging to golden number 8 is advanced, by an unfair dispensation, by only a single day.

He then adds another example of much the same kind. Let the golden number be j and the Paschal new moon March 8, which will happen in the year 3610. Then, when the golden number is 15, namely in the year 3624, the new moon falls on April 3. Again, let the golden number be j and the Paschal new moon March 10, in the year 3914. Then, when the golden number is 15, which will happen in the year 3928, the Paschal new moon will fall on April 4. Therefore, over an equal interval of years — 304 (as many as are counted both from 3610 to 3914 and from 3624 to 3928) — the new moon that belongs to golden number j is advanced by two days, but the one belonging to golden number 15 is advanced, by an unfair dispensation, by only a single day.

But look here, Viète: what unfairness is committed in this dispensation? What law, what decree ever forbade that, on account of the alternating lunations of 30 and 29 days, some Epact — such as $xxiii$, set at April 5 — should be shifted from its own place (that is, up from April 6) to April 5? Or that Epact 25, prefixed to April 4, should be shifted from April 5 to April 4? For what harm does this bring to the correct celebration of Easter? Did not the very same thing happen in the golden-number Cycle of the Council of Nicaea? For in it, when the golden number was j , the Paschal new moon fell on March 23; but after 13 years, when the golden number was 14, the same fell on March 30. Again, when the golden number was 9, the Paschal new moon stood on March 25; but after 13 years, when the golden number was 3, the same new moon fell on March 31. Did the Fathers of Nicaea, then, act unfairly in so arranging the golden-number Cycle that from golden number j to golden number 9 the new moon was advanced by two days, but from golden number 14 to golden number 3 by one day only — even though golden number 14 stands as far from j as golden number 3 does from 9? That this is indeed so is plain from the ancient Ecclesiastical Calendar which we set out in chapter 9. Nor will you ever prove this unfair, since on account of the alternating lunations of 30 and 29 days it cannot be avoided.

But perhaps you altogether escape this "unfair" dispensation (if you insist on calling it so) in your own Calendar? What if I convict you of being guilty of the very same crime — if crime it must be called, since it happens of necessity? Let the golden number be j and the Paschal new moon March 24, which occurs when your Epact is $xiii$. Then, when the golden number is 8, the new moon will fall on March 8, where Epact $xxix$ is placed, which you then take for the sign $\blacklozenge$. Again, let the golden number be j and the Paschal new moon March 26, when your Epact is xj . Then, when the golden number is 8, the new moon falls on March 9, where the Epact is $[xij]$. All of which is derived from your own Cycle set directly against the golden number. Do you not see that, over an equal interval of years — 513

(for in the year 7011 the golden number is j and your Epact xiiij, but in the year 7018 the golden number is 8 and the Epact xxix; then in the year 7524 the golden number is again j and the Epact xj, while in the year 7531 the golden number is 8 and the Epact xxviii) — the new moon that belonged to golden number j is advanced by two days, from the 24th to the 26th, whereas the one that fell to golden number 8 is advanced by one day only, from the 8th to the 9th? Once more, let the golden number be j and the Paschal new moon March 24, according to Epact xiiij. Then, when the golden number is 8, and hence your Epact is xxix, out of your Cycle the new moon falls on March 8. Again, let the golden number be j and the Paschal new moon March 25, near Epact xij. Then, when the golden number is 8, the new moon falls on March 8, according to Epact xxix, which then concurs with golden number 8, out of your cycle. Therefore the new moon of golden number j is advanced by one day, but the new moon of golden number 8 remained fixed on March 8. I could bring forward countless examples of this kind, but there is no point in dwelling on a trifling matter. For the lunar months of 30 and 29 days compel this unequal progression to happen — as occurs in our Calendar in six months, on account of Epacts 25 and xxiiij, which are shifted up by one day; and the same is seen in your Calendar, on account of the sign ♦, which forces one to take now Epact j, now xxix, in its place. Wrongly, then, do you condemn the Gregorian Calendar for this unequal progression, since it is found in your Calendar too, and no cycle can escape it.

QVINTO. Viète censures us on the ground that in the Gregorian Calendar we employ Epact xxv with a golden number not greater than 11, but Epact 25, depicted in another colour, with a golden number greater than 11; and that on account of the former we have bound Epact xxiiij to the same day, while the latter we have associated with Epact xxvj. For he would prefer the former to occur with a golden number not greater than 10, and the latter with a golden number greater than 10. Behold a crime that the most learned gentleman Viète can atone for by no expiation! As though we too had not done this on account of the alternating lunations of 30 and 29 days, as we set out fully in chapter 10. And see into what labyrinths he throws himself, when we take Epact 25, ascribed to April 4, with a golden number greater than 11, but he takes Epact j, affixed to April 5; and again, when we use Epact xxv, placed at April 5, with a golden number not greater than 11, while he uses Epact ij, set before April 4 — as we shall point out a little later. The Table of Movable Feasts in chapter 22, computed up to the year 5000, plainly demonstrates that Epact 25 is rightly associated with Epact xxvj, and Epact xxv with Epact xxiiij. And that we distinguish the first 11 golden numbers, which are not greater than 11, from the latter 8, which are greater than 11, we do in agreement with the ancient computists, who divided the

nineteen-year cycle not into a decad and an ennead [ten and nine], as Viète does, but into an endecad and an ogdoad [eleven and eight] — and that with great deliberation and reason. For among all nations the nineteen-year cycle of the golden number has been so arranged in the Calendar that each following [Epact] is formed from the preceding by the addition of

the number eight, and each preceding from the following by the addition of eleven, as we taught in chapter 9, number 7 — a scheme which can in no way accord with an ennead and a decad.

SEXTO. The Epacts seem to Viète to be wrongly ordered in the Gregorian Calendar, which he tries to show as follows. In the year 1500, before the correction, when the golden number was 3, Epact *iiij* was current, indicating in the Gregorian Calendar a Paschal new moon on March 28. After the correction, however, once the 10 days had been removed, March 28 falls on April 7 (I am surprised that he himself says April 6, since 10 added to 28 makes March 38, that is, April 7, not 6); and Epact *iiij* passes into *xxiiij*, which indicates a new moon on April 6, not April 7. He then goes on: "If the Epacts are said to be well ordered, the Paschal new moons will not be consistent with themselves. For since in the year 1500 the new moon, after the correction, has slipped from March 28 to April 7, where Epact *xxij* stands, the Paschal new moon ought then to have fallen on March 9, where the same Epact *xxij* is placed — which is false, since Epact *iiij* has then been changed into *xxiiij*, which puts the Paschal new moon back to March 8, not March 9."

Here Viète behaves maliciously. For he takes March together with April, where — on account of the alternating months of 30 days — Epact *xxiiij*, together with the others below it, has left its own seat and migrated into the higher one; so that it is no wonder the aforesaid variation appears in the new moons, a variation which nevertheless does no harm to the solemnity of Easter. But if we take April together with May, where the two Epacts *xxv* and *xxiiij* are not associated together, that diversity has no place, but everything agrees among itself most beautifully. For, to keep to the same example: in the year 1500, before the correction, with golden number 3, Epact *iiij* was used, whose new moon falls on April 26. Then, after the correction, on account of the removal of the 10 days, April 26 becomes the 36th, that is, May 6, and Epact *iiij* is changed into *xxiiij*; and you see that Epact *xxiiij* is prefixed to May 6. The same may also be observed either in March alone, or in March and April together, provided the 10 days removed do not compel us to descend below Epacts *xxv* and *xxiiij*. For in the same year 1500, before the correction, Epact *vj* answered to golden number 6,

putting the new moon back to March 25. Then, since through the 10 days removed March 25 becomes the 35th, that is, April 4, and Epact *vj* is changed into *xxvj*, you perceive that this is set at April 4.

Viète's other example, too, does not bear on the matter, on account of those two Epacts *xxv* and *xxiiij* tied to the same day. For unless Epacts *xxij* and *xxiiij*, together with *xxiiij*, had risen up by one day in April, Epact *xxij* would be placed at April 7, which indeed indicates a Paschal new moon on March 8, as Viète wishes. Cunningly, then, he took up Epact *xxij* below Epacts *xxv* and *xxiiij*, since it had deserted its own place. But if this cunning may be permitted, we shall catch him labouring under this very disease that he so dreads. For since on March 27 — where, with golden number 14 concurring with Epact *iiij*, the Paschal new moon fell before the correction in the year 1500 — this same date, after the correction, by the removal of the 10 days, becomes the 37th, that is, April 6; and Viète's Epact concurring at that time with golden number 14 is *j*, as appears from his Cycle; he ought, if he has argued rightly against us, to have his Epact *j* occupy April 6 — yet he has prefixed it to April 5. His Epacts, then, are not rightly ordered, which he will not grant. But the cause of this diversity in his case is the same as in ours. For in place of the two Epacts *xxv* and *xxiiij* ascribed to the same day, he takes now *xxix*, now *j*, for the sign $\blacklozenge$ or $\odot$. So this is not absurd, since the nature of the Cycle necessarily brings it about, in whatever way it is arranged, provided the lunations are set at alternating 30 and 29 days, as reason demands.

SEPTIMO. It vexes Viète that we change the Epacts at the beginning of January. For from that change it follows that in the first two months the new moons fall one day later in the non-bissextile centennial years, since the day is subtracted not at the beginning of the year but on February 24. What then, Viète? Do the Paschal months, of which greater account must be taken, on that account advance less correctly? I do not see it. Beware of thinking that those who took part in the correction of the Calendar did not notice this distinction. We openly acknowledged it, as we said in chapter 12, number 5, near the beginning. They valued uniformity in the correction of the Calendar more than that postponement of the Moon. For since the Catholic Church, from the Council of Nicaea down to the Gregorian correction, has always changed the golden number at the beginning of January, why should we not change at that same point the Epact, which depends on the golden number? — especially since nothing absurd arises from it in the Paschal new moons, whereas that postponement occurs only in the first two months of that one centennial year in which the intercalation is omitted.

OCTAVO. Viète asserts that the nineteen-year Lunar Cycle and the Cycle of 300000 years of the table of the equation of the Epacts — of which we treated in chapter 11, number 10 — do not agree with each other; which we readily concede. For long ago, in chapter 12, number 10, we rejected the Cycle of 300000 years, and taught that it no longer has any place, because we there set up the table of the equation otherwise than it was, in the author of the Calendar's opinion, continued and extended uniformly up to the year 300000 — from which uniformity alone that Cycle was gathered; although the very author of the Calendar well knew that that uniformity could not last forever. And so this weapon, launched against the Calendar, would strike the author of the Calendar himself, if he had affirmed his equation, and the Cycle of 300000 years gathered from it, to be wholly accurate — which, however, he did not assert; but the Calendar itself, if the equation be corrected, as we taught in chapter 11, it does not so much as lightly graze. It only proves that the equation, according to the author's opinion, was not rightly framed in chapter 11 for the longer ages — which neither the author nor we deny, since we afterwards corrected it in chapter 12, number 10.

POSTREMO. He insists and presses that, in the most widely separated ages, through the equation of the Epacts prescribed in chapter 11, the Epact exhibits a new moon when the Moon is nearly [Greek: διχότομος (dichotomos, "cut in two," i.e. at the half — first or last quarter); the ☉ is the -ος abbreviation ligature] or [Greek: πανσέληνος (panselēnos, "full moon")]. As examples he adduces the years 109500 and 218000 — which is true. For to the former year there agree golden number 4 and Epact xix, according to that equation, placing the new moon at March 12, whereas the mean new moon is, by calculation, on March 18 at about hour 11. To the latter year the golden number is 14 and the Epact xxiiij, indicating a new moon on April 5, whereas the tables teach that the mean new moon then occurs on March 20 at about hour 2. But we approve not that equation, but the one we established as corrected in chapter 12; and if the Epacts are derived from it, we shall find that, for the use of the Church, they agree not badly with the astronomical calculation. For in the year 109500 it yields Epact xi, whose new moon falls on March 20; and in the year 218000 the same yields Epact viii, which puts the new moon back to March 23. These two new moons follow the celestial ones at just so great an interval as suffices for the fourteenth Moons not to anticipate the mean oppositions by more time than is fitting. For although

Epact viii postpones the new moon in the year 218000, yet in the year 219000, in which the golden number is 7, Epact xvj rightly puts the fourteenth Moon back to March 28, since the mean opposition then occurs on the 28th at about hour 5. But

your Epact, my Viète (that I may say this too in passing), in the same year — as is gathered from your rule, which I shall subjoin below — will be xxij, putting the fourteenth Moon back to March 27; and hence, if the following day were a Sunday, you would celebrate Easter before the mean Full Moon. More rightly, then, does our equation stand at that point than yours; so that you cannot boast that you have framed a better equation than we — since in the most remote ages now ours, now yours, more rightly exhibits the fourteenth Moons.

It is no wonder that the equation does not always answer exactly to the celestial motions, as we said in chapter 12, number 10 — especially in view of ages so far distant, which are adduced as examples. Therefore this argument of yours, Viète, proves nothing, if the equation of the Epacts is rightly framed, as we have done in chapter 12, number 10 — although its truth is sought in vain over ages so far distant, as we said in the same place. Nor does it avail much against the equation of the author of the Calendar handed down in chapter 11. Nor did the author, and those who took part in the correction, put forward that equation as most certain and never in need of amendment; since in chapter 12, number 16, he frankly confesses that not only it, but ours too, must be changed, if perchance it should not rightly exhibit the Epacts after some thousands of years — and we have also prescribed the manner and reasoning of the correction there, and at the end of the same chapter 12. The only thing the correctors of the Calendar kept before their eyes was to explore in what order, according to that reasoning of the equation, the letters of the expanded table would proceed. From this it came about that the Cycle of 300000 years was gathered — although, as has been said, it does not answer to the new moons over ages so far distant. It was enough for the author that this equation should rightly show the Epacts for thousands of years to come, which is most true; but the care of correcting it in future ages he left to posterity, should the world endure.

[Margin: What the author of the Calendar and its correctors kept before their eyes in the equation of the Epacts.]

What, then, can you bring against that equation that is of any moment? You would indeed convict it of falsity only if the author had asserted that it would never need correction — which you will nowhere find; but rather the contrary, as has been said. Yet in these two last reproaches you have a just excuse: namely, that you had not seen what we wrote in this book concerning the correct equation of the Epacts; which, had you read it through, I do not doubt you would have judged more fairly and more rightly of the Gregorian Calendar, which was published in the year 1582.

QVIN. Moreover, if it had come to your mind that no Cycle, however skilfully equated, can answer exactly to the astronomical calculation for the more remotely distant ages, you would without doubt not so easily have condemned the author's equation — since not even your own equation, which you value so highly, agrees with the celestial motions for all future ages. Two examples, brought forward by you yourself, bear witness to this. The first is the year 19480000, in which the golden number is 4 and the Epact, according to your equation, as you assert in proposition 17, is xxix, exhibiting a Paschal new moon on March 8; and yet the truer calculation in that year gives the mean Paschal new moon on March 30, at hour 15 after noon, and something more. The other example is the year 165580200, whose golden number is 8 and your Epact ij, as you affirm in proposition 39 — although in proposition 40 you say (which is astonishing) that the new moon is on April 2, and hence the Epact iiij. But whichever you take, the truer astronomical calculation will disagree with it, for it indicates the mean new moon on March 22 at hour 15 after noon. You see, then, that not even your equation agrees with the astronomical calculation over ages so far distant — the cause of which matter we disclosed in chapter 12, number 10.

IMMO. Nay, not even in the less remote ages can the Epacts always answer to the astronomical calculation. Let this one example, out of many, be chosen. In the year 4900 the golden number is 18, the Gregorian Epact xviii, Viète's j. The fourteenth Moon of both falls on April 18, whereas the mean opposition occurs on April 19 at hour 19 after noon — which is not the Paschal one, but rather the one that in March falls on day 21 at hour 6 after noon.

[Margin: That in any given cycle certain Epacts fail to exhibit fitting fourteenth Moons.]

Why then, someone may say, is the equation not so framed that to your golden number 18 there should answer Epact xxiii in the Gregorian Calendar, and Epact xxix in Viète's? I reply that this is not expedient. For then to the other golden numbers other Epacts would answer, lower by one unit than the earlier ones; and so their fourteenth Moons would be postponed, whereas the earlier Epacts, when golden number 18 gives Epact xxiiii, for the most part rightly show the fourteenth Moons. The same could be shown in most of the other Epacts, some of which seem to anticipate the mean oppositions too much, others to postpone them too much: so that the placement of the Epacts, and their equation, is faulted without cause under this head — that some of them, even in the less remote ages, accord less aptly with the celestial motion; since this happens in every cycle.

[Margin: Why the placement of the Epacts, and their equation, cannot be faulted on that account.]

On which matter more has been written by us in chapter 19, number 6 and following, and can most clearly be seen in the Table of Movable Feasts, chapter 22. Unjustly, too, is our equation accused by Viète, for this one reason only — that in the most remote ages it does not answer to the celestial new moons; just as though we had not frankly confessed, in chapter 12, numbers 18, 19, and 20, that it can neither be perfect nor therefore everlasting: seeing that we have also prescribed a rule by which our posterity may amend it after such far-distant ages. Whereas not even the one that he himself puts forward as most certain is, if it be applied to the more remote ages, altogether free of fault — nay, it contains graver errors than ours; since in the year 19480000 it exhibits a Paschal new moon on March 8 by Epact xxix, two-and-twenty days and more before the mean Paschal new moon, which occurs on March 30 at hour 15 — that is, when the Moon is [Greek: διχότομος (dichotomos, at the half)] after the non-Paschal new moon, which occurs on March 1 at hour 3; and this is indeed worse than when the Moon is διχότομος or πανσέληνος after the Paschal new moon. But in the year 165580200 it would offer a new moon on April 2 or 4 by Epact ij or iiij, eleven or thirteen days after the Paschal new moon, which falls on March 22 at hour 15 — that is, when the Moon is nearly πανσέληνος [full], as I showed a little before.

Since, then, most learned Viète, you have been so unfair a judge of our Cycle of Epacts — seeing that in the very thing for which you reproach us, you yourself sin more gravely; and especially since we lay down that our equation must be corrected in ages so remote, which you do not assert of yours — since, I say, you have been so unfair a judge: which of us (that I may turn back upon you what you wittily said against us) would tolerate in our assembly [Greek: χρηματίζοντα κ γνώμην εἰς βουλήν εἰσφέροντα (chrēmatizonta kai gnōmēn eis boulēn eispheronta) — roughly "one who [merely] styles himself [a judge] and brings his opinion into the council"; the κ is this fount's καί ligature sort, and γνώμην and βουλήν are set with its ην ligature and 8 (ου) ligature sorts]?

NE. But that you may not doubt the truth of our calculation, know that it is drawn from the most approved astronomers — the one, indeed, which we set out in chapter 13. And from this calculation the one that you put forward in proposition 9 in the common Calendar differs only in certain hours: which indeed happens on account of certain scruples neglected in both

Caput XXIII (continued)

passed over. Furthermore, I shall explain this calculation of yours later, since it does not displease me — though I shall propose a more accurate one. For as you set it out, it is not entirely free of error, as will be clear in the following chapter. Then, in chapter 26, I shall construct yet another method of calculating, and indeed an easier one.

12. From the remarks I have briefly made against Viète's Calendar, and from my replies to his slanders against the Gregorian one, any fair and prudent reader will readily judge, of the two Calendars, which of them truly deserves to be called Gregorian. That Viète's is utterly foreign to Gregory's intention — and therefore (be it said with all respect to him) most justly to be called Pseudo-Gregorian — no one will be able to doubt who, setting aside all the other absurdities in it, considers a little more carefully that in it the beginning of the year is altered and the leap years and common years are confused with one another. For in it the years become leap years before those very years begin which are leap years with us. To take an example: in the year 1604 it intercalates a day along with us, before the year 1604 begins in his reckoning. Likewise it does not preserve the reckoning of the Epacts, if these are compared with the Epacts as they stood before the correction of the Calendar. But he will recognize this far more clearly if he inspects, not carelessly, the errors of the fourteenth Moons which I shall shortly append. It remains, therefore, that the Calendar which Gregory ordered to be published in the year 1582 is the truly Gregorian one, since it was drawn up entirely in accordance with Gregory's mind. Of this I can be an eyewitness, since I took part in this correction, together with other most learned men, for nearly ten years, and more than once dealt privately with the Pope himself concerning this whole business of the correction. Indeed I remember that Gregory impressed upon me again and again that the change made in the Calendar should be as small as possible; and this, he said, was the mind of the Kings and of the other Princes. It is clear, then, that it was not the Pope's intention — as Viète dreams — that the beginning of the year and the Epacts should be dislodged from their place. But let us now come to matters of greater moment.

[Margin: That Gregory's mind, in correcting the Calendar, was not the one Viète imagines for himself.]

13. In rightly establishing the fourteenth Moons, all the effort of one who undertakes to arrange the Epacts in the Calendar ought to be expended. I am well aware that no Cycle set out in the Calendar, with whatever care and diligence,

can so agree with astronomical calculation that it does not sometimes differ from it by nearly a whole day; the manifold cause of this I set forth in chapter 18, Number 8, and elsewhere; and Viète readily concedes this same point. This much only must be strenuously striven for: that the fourteenth Moons of the cycle do not precede the mean oppositions by more than one day; likewise that (except very rarely, and this on account of the imperfection of the cycle) the nearest Paschal opposition does not fall before the 22nd of March — that is, that it does not fall on the 21st before noon — and that the latest does not fall after the 19th of April, but rather occurs either on the 18th after noon or on the 19th before noon. For the computists teach that the opposition which occurs before the 22nd of March belongs to the last month of the year, and the one which follows the 19th of April belongs to the second month. But concerning the fourteenth Moon I have written more in chapter 18, Number 4. And if it should ever happen that in some year no mean opposition is Paschal according to this rule — namely because the one in March precedes the 22nd, while the one in April follows the 19th (that this can happen I both showed plainly in chapter 19, Number 6, and it will also be easily understood from what follows) — then it is the lesser fault to take the one that falls in the second month rather than the one that falls in the last. This foundation laid, let us now examine several fourteenth Moons, so that all may understand that they are more correctly indicated in the Gregorian Calendar than in Viète's.

[Margin: What must be attended to in arranging the Cycle in the Calendar.]

At the outset, moreover, I observe in Viète (which greatly astonishes me) two mutually contradictory tables of the equation of the Epacts: one in the small Calendar published separately, and therefore the one he seems to propose for the Church to adopt; the other in the *Relation of the Calendar* presented to Clement VIII, which indeed agrees entirely with his own *proemptosis* and *metemptosis* of the Moon, as he declares in proposition 39 — so that I am uncertain and in doubt which of the two he more approves. But lest, by examining only one, I should seem to do an injustice to the other, I shall set this doubt and hesitation aside and undertake to examine and scrutinize both, since in each there is found something deserving of censure. For although the later table, up to the year 4900, is entirely the same (as regards the order of the letters) as ours, nevertheless, on account of the new placement of its Epacts in the Calendar, I have detected not a few errors in it as well. But here is the perpetual Table of the Cycle of Epacts, together with both its tables of the equation.

SEQVITVR

The perpetual Table of the cycle of Epacts, with both tables of the equation of those same Epacts.

Viète's perpetual Table of the Cycle of Epacts.

The table sets the 30 index letters (Dominical-letter sorts) each over its Epact, in three bands of ten columns. The first column is headed by the digamma sort (YY), whose Epact is the solid lozenge ◆ (Epact 30).

| | | | | | | | | | |
|----|-----|------|--------|---------|-----|------|-------|---------|------|
| YY | l | C | c | p | F | f | f | M | i |
| ◆ | xj | xxij | iiij | xiiiij | xxv | vj | xvij | xxviiij | ix |
| A | a | m | D | d | q | G | g | t | N |
| xx | j | xij | xxiiij | iiiij | xv | xxvj | vij | xviiij | xxix |
| k | B | b | n | E | e | r | H | h | u |
| x | xxj | ij | xiiij | xxiiiij | v | xvj | xxvij | viiij | xix |

I. Table of the equation of the perpetual Cycle of Epacts, as described in the small Calendar published separately.

Three panels across the page; each panel gives the index letter, the Year of the Lord (*Anni Dñi*), and the leap-year mark (*Biss.*) where present. Horizontal rules group the years in fours (as printed).

| Inde | Anni Dñi | Biss. | Inde | Anni Dñi | Biss. | Inde | Anni Dñi | Biss. |
|------|----------|-------|------|----------|-------|------|----------|-------|
| N | 1582 | | E | 2700 | | u | 3900 | |
| N | 1600 | Biss. | E | 2800 | Biss. | A | 4000 | Biss. |
| M | 1700 | | D | 2900 | | u | 4100 | |
| M | 1800 | | D | 3000 | | t | 4200 | |
| H | 1900 | | C | 3100 | | t | 4300 | |
| H | 2000 | Biss. | C | 3200 | Biss. | t | 4400 | Biss. |
| H | 2100 | | B | 3300 | | f | 4500 | |
| G | 2200 | | C | 3400 | | f | 4600 | |

| Inde
x | Anni Dñi | Biss. | Inde
x | Anni Dñi | Biss. | Inde
x | Anni Dñi | Biss. |
|-----------|----------|-------|-----------|----------|-------|-----------|----------|-------|
| F | 2300 | | B | 3500 | | r | 4700 | |
| G | 2400 | Biss. | B | 3600 | Biss. | r | 4800 | Biss. |
| F | 2500 | | B | 3700 | | r | 4900 | |
| E | 2600 | | A | 3800 | | | | |

II. Table of the equation of the same Cycle, as proposed in the Relation of the Calendar.

| Inde
x | Anni Dñi | Biss. | Inde
x | Anni Dñi | Biss. | Inde
x | Anni Dñi | Biss. |
|-----------|----------|-------|-----------|----------|-------|-----------|----------|-------|
| N | 1582 | | E | 2700 | | u | 3900 | |
| N | 1600 | Biss. | E | 2800 | Biss. | u | 4000 | Biss. |
| M | 1700 | | D | 2900 | | t | 4100 | |
| M | 1800 | | D | 3000 | | f | 4200 | |
| H | 1900 | | C | 3100 | | f | 4300 | |
| H | 2000 | Biss. | C | 3200 | Biss. | f | 4400 | Biss. |
| H | 2100 | | C | 3300 | | r | 4500 | |
| G | 2200 | | B | 3400 | | r | 4600 | |
| F | 2300 | | A | 3500 | | q | 4700 | |
| G | 2400 | Biss. | B | 3600 | Biss. | q | 4800 | Biss. |
| F | 2500 | | A | 3700 | | q | 4900 | |
| E | 2600 | | u | 3800 | | | | |

In this later table you see that the years 3300, 3400, 3500, 3700, 3800, 4000, 4100, 4200, 4300, 4400, 4500, 4600, 4700, 4800, 4900 have letters different from those which Viète assigns to the same years in the earlier table. Indeed — what is more astonishing — in the Calendar printed separately, in Canon 2, he even writes the contrary about the Epact 29 or 1 to be taken when the digamma YY, or the sign ◆, occurs. To what end this inconstancy is, let him see for himself.

The use of these tables in finding the Epact of any given year does not differ from our own use, which we explained in chapter 12, Number 6 — except that, when the given golden number falls in the cell of the letter YY, Viète does not wish the Epact ◆ to be taken under that letter, but rather the Epact 29 (xxix), if the golden number is not greater than 10, and the Epact 1 (j) if the golden number is greater

than 10. For these two Epacts are set around the Epact ♦ in the Calendar. For example: in the century 4500 or 4600, with the golden number 7 running, when golden number 3 is assigned to the cell of the letter r — which in the later table is set at the head of the said centuries — golden number 7 will fall in the cell of the letter YY; and therefore the Epact then to be taken is 29 (xxix). Likewise, in the centuries 4200, 4300, 4400, to which in the earlier table the letter t is ascribed, if golden number 3 is assigned to the cell of the letter t, golden number 15 will fall in the cell of the letter YY. Therefore Viète's Epact then will be 1 (j).

And so, if the Epacts are investigated according to the earlier table of the equation, we shall find that, up to the year 4900 (which is the last in the table), Viète proposes 125 Easters to be celebrated before the mean opposition. I pass over the well-nigh innumerable fourteenth Moons which precede the mean oppositions by more than is fitting — to such a degree that, if the following day were a Sunday, Easter would then likewise be kept before the mean full moon. But because the Dominical letter corrects this error, inasmuch as it does not immediately follow the fourteenth Moon, I judged it best to say nothing of it, lest I overwhelm the reader with a multitude of errors — although those fourteenth Moons are, by the reckoning of all computists, faulty by their very nature, since the very next following day forestalls the mean opposition, as we said a little earlier and discussed at length in chapter 18, Number 4. This is something Viète himself also admits in proposition 40, where he writes thus: *Care therefore had to be taken that the fifteenth we established should not coincide with the Jewish fourteenth.* Look, then, at the following table, in which those 125 years are set out, with the Dominical letters, the golden numbers, the Epacts both Viète's and Gregorian, and their fourteenth Moons, the mean oppositions, and the days on which Easter is proposed to be celebrated according both to Viète's Calendar and to the Gregorian. For thus, by comparing the two with each other, all will easily perceive, even with their own eyes, that Viète's Calendar is thoroughly faulty, whereas the Gregorian one is in agreement with the decrees of the Fathers, since it presents the fourteenth Moons and the solemnity of Easter rightly, as the Canons require. In this table the letter M signifies March, and A April. In the oppositions, moreover, the former number indicates the Day, the latter the hours after noon.

[Margin: That Viète, according to the earlier table of the equation, presents 125 Easters before the mean full moon.]

SEQVITVR

A Table with the errors committed by Viète in the earlier table of the equation.

The great comparison table begun under the rubric **SEQVITVR** on the preceding leaf continues here without a break. It sets, year by year for the error-years between A.D. 3408 and 4998, Viète's calendar against the Gregorian, so as to display the 125-odd years in which Viète's reckoning would place Easter on or before the mean opposition (full moon). The columns are, in the exact printed order: the year (**Anni**); the golden number (**Aur. Num.**); Viète's epact (**Epact. Vietæ**); Viète's fourteenth Moon (**Lun. xiiij. Vietæ**); the Dominical letter(s) (**Literæ Dominicales**); Viète's Easter (**Pascha Vietæ**); the Gregorian epact (**Epact. Greg.**); the Gregorian fourteenth Moon (**Lunæ xiiij. Gregor.**); the Gregorian Easter (**Pascha Gregor.**); and the mean opposition (**Oppos. mediæ**).

In the Moon and Easter columns the letter after the day is the month: **M** = **March**, **A** = **April**. In the mean-opposition column the entry is day. hours month — the first number is the day, the second the hours after noon, the letter the month.

The SEQVITVR error-table (folios 522–524)

| Aur
n .
n Nu
i m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
. .
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
. .
medi
æ |
|----------------------------|-----------------|----------------------|--------------------|---------------------|-----------------------|------------------------|-----------------------|---------------------------|
| 3 8
4
0
8 | xvij | 2 A | c b | 3 A | x | 3 A | 10 A | 3. 5 A |
| 3 11
4
1
1 | xx | 30 M | f | 31 M | xiiij | 31 M | 7 A | 31. 21 M |
| 3 15
4
1
5 | iiij | 15 A | A | 16 A | xxvij | 16 A | 23 A | 16. 9 A |
| 3 9
4
2
8 | xxviiij | 22 M | f e | 23 M | xxj | 23 M | 30 M | 23. 7 M |
| 3 16
4 | xv | 4 A | d | 5 A | viiij | 5 A | 12 A | 5. 11 A |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|----------------------------|----------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 3
5
3
4
4
2 | 4 | iiij | 16 A | b | 17 A | xxvj | 17 A | 24 A | 17. 15
A |
| 3
4
5
5 | 17 | xxvj | 24 M | g | 25 M | xix | 25 M | 1 A | 25. 12
M |
| 3
4
6
2 | 5 | xiiij | 5 A | e | 6 A | vij | 6 A | 13 A | 6. 16
A |
| 3
4
8
2 | 6 | xxv | 25 M | A | 26 M | xviiij | 26 M | 2 A | 26. 17
M |
| 3
4
8
6 | 10 | ix | 10 A | c | 11 A | ij | 11 A | 18 A | 11. 6
A |
| 3
5
0
6 | 11 | xix | 31 M | g | 1 A | xij | 1 A | 8 A | 1. 7 A |
| 3
5
3
7 | 4 | ij | 17 A | c | 18 A | xxv | 18 A | 25 A | 18. 1
A |
| 3
5
5 | 1 | xxix | 21 M | d | 22 M | xxij | 22 M | 29 M | 22. 14
M |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|------------------|----------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 3
7
6
3 | 2 | x | 9 A | b | 10 A | iiij | 10 A | 17 A | 11. 1
A |
| 3
7
8
3 | 3 | xxj | 29 M | e | 30 M | xiiij | 30 M | 6 A | 31. 3
M |
| 3
7
8
4 | 4 | ij | 17 A | d c | 18 A | xxv | 18 A | 25 A | 18. 0
A |
| 3
7
8
7 | 7 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 15
A |
| 3
8
0
0 | 1 | xxviiij | 22 M | e | 23 M | xxj | 23 M | 30 M | 24. 13
M |
| 3
8
0
4 | 5 | xij | 7 A | A g | 8 A | v | 8 A | 15 A | 8. 2 A |
| 3
8
2
4 | 6 | xxiiij | 27 M | d c | 28 M | xvj | 28 M | 4 A | 28. 3
M |
| 3
8
2
7 | 9 | xxvj | 24 M | g | 25 M | xix | 25 M | 1 A | 25. 18
M |
| 3 | 13 | x | 9 A | b | 10 A | iiij | 10 A | 17 A | 10. 7 |

| A
n
n
i | Aur
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|------------------|-----------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 8
3
1 | | | | | | | | | A |
| 3
8
5
1 | 14 | xxj | 29 M | e | 30 M | xiiij | 30 M | 6 A | 30. 8
M |
| 3
8
5
8 | 2 | ix | 10 A | c | 11 A | ij | 11 A | 18 A | 12. 11
A |
| 3
8
7
8 | 3 | xx | 30 M | f | 31 M | xiiij | 31 M | 7 A | 31. 15
M |
| 3
8
8
2 | 7 | iiij | 15 A | A | 16 A | xxviij | 16 A | 23 A | 16. 2
A |
| 4
0
0
0 | 11 | xviiij | 1 A | b A | 2 A | xj | 2 A | 9 A | 2. 5 A |
| 4
0
0
3 | 14 | xxj | 29 M | e | 30 M | xiiij | 30 M | 6 A | 30. 21
M |
| 4
0
0
7 | 18 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 9
A |
| 4
0 | 2 | ix | 10 A | c | 11 A | ij | 11 A | 18 A | 12. 0
A |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|---|--|---|---|--|--|---|--|---|--|
| 1
0
4
0
2
0
4
0
2
7
4
0
3
0
4
0
3
4
4
0
5
4
4
0
7
4
4
0
7
8
4
0
9 | 12

19

3

7

8

9

13

14 | xxix

xvj

xx

iiij

xv

xxvj

x

xxj | 21 M

3 A

30 M

15 A

4 A

24 M

9 A

29 M | e d

c

f

A

d

g

b

e | 22 M

4 A

31 M

16 A

5 A

25 M

10 A

30 M | xxij

ix

xiiij

xxvij

viiij

xix

iiij

xiiij | 22 M

4 A

31 M

16 A

5 A

25 M

10 A

30 M | 29 M

11 A

7 A

23 A

12 A

1 A

17 A

6 A | 22. 7
M

4. 11
A

1. 2 A

16. 15
A

5. 16
A

25. 17
M

10. 6
A

30. 7
M |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|------------------|----------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 8 | | | | | | | | | |
| 4
1
0
5 | 2 | viiij | 11 A | d | 12 A | j | 12 A | 19 A | 12. 11
A |
| 4
1
2
5 | 3 | xix | 31 M | g | 1 A | xij | 1 A | 8 A | 1. 13
A |
| 4
1
2
9 | 7 | iiij | 16 A | b | 17 A | xxvj | 17 A | 24 A | 17. 1
A |
| 4
1
4
9 | 8 | xiiij | 5 A | e | 6 A | vij | 6 A | 13 A | 6. 3 A |
| 4
1
9
9 | 1 | xxvij | 23 M | f | 24 M | xx | 24 M | 31 M | 25. 0
M |
| 4
2
0
0 | 2 | vij | 12 A | A | 13 A | * | 13 A | 20 A | 13. 22
A |
| 4
2
0
3 | 5 | x | 9 A | b | 10 A | iiij | 10 A | 17 A | 10. 13
A |
| 4
2
2
3 | 6 | xxj | 29 M | e | 30 M | xiiij | 30 M | 6 A | 30. 14
M |

| A
n
n
i | Aur
. Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ Dom. | Pasch
a Vietæ | Epact
. Greg. | Lunæ xiiij.
Gregor. | Pascha
. Gregor | Oppos
. medi
æ |
|------------------|-------------------|-----------------|----------------------|-----------------|------------------|------------------|------------------------|--------------------|----------------------|
| 4
2
2
7 | 10 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 3
A |
| 4
2
4
0 | 4 | xxix | 21 M | e d | 22 M | xxij | 22 M | 29 M | 22. 1
M |
| 4
2
4
7 | 11 | xvj | 3 A | c | 4 A | ix | 4 A | 11 A | 4. 4 A |
| 4
2
6
7 | 12 | xxvij | 23 M | f | 24 M | xx | 24 M | 31 M | 24. 6
M |
| 4
2
9
4 | 1 | xxvj | 24 M | g | 25 M | xix | 25 M | 1 A | 25. 11
M |
| 4
2
9
8 | 5 | x | 9 A | b | 10 A | iiij | 10 A | 17 A | 10. 0
A |
| 4
3
0
1 | 8 | xiiij | 6 A | f | 7 A | vj | 7 A | 14 A | 7. 15
A |
| 4
3
2
1 | 9 | xxiiij | 26 M | b | 27 M | xvij | 27 M | 3 A | 27. 16
M |
| 4 | 14 | xix | 31 M | g | 1 A | xij | 1 A | 8 A | 1. 6 A |

| Aur
n .
n Nu
i m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|----------------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 4 1 | xxvj | 24 M | g | 25 M | xix | 25 M | 1 A | 26. 13
M |
| 3 | | | | | | | | |
| 5 | | | | | | | | |
| 1 | | | | | | | | |
| 4 2 | vij | 12 A | f e | 13 A | * | 13 A | 20 A | 13. 10
A |
| 3 | | | | | | | | |
| 5 | | | | | | | | |
| 2 | | | | | | | | |
| 4 5 | x | 9 A | b | 10 A | iiij | 10 A | 17 A | 10. 23
A |
| 3 | | | | | | | | |
| 5 | | | | | | | | |
| 5 | | | | | | | | |
| 4 3 | xviiij | 1 A | b A | 2 A | xj | 2 A | 9 A | 2. 12
A |
| 3 | | | | | | | | |
| 7 | | | | | | | | |
| 2 | | | | | | | | |
| 4 6 | xxj | 29 M | e | 30 M | xiiij | 30 M | 6 A | 31. 3
M |
| 3 | | | | | | | | |
| 7 | | | | | | | | |
| 5 | | | | | | | | |
| 4 7 | ij | 17 A | d c | 18 A | xxv | 18 A | 25 A | 18. 0
A |
| 3 | | | | | | | | |
| 7 | | | | | | | | |
| 6 | | | | | | | | |
| 4 10 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 15
A |
| 3 | | | | | | | | |
| 7 | | | | | | | | |
| 9 | | | | | | | | |
| 4 4 | xxix | 21 M | e d | 22 M | xxij | 22 M | 29 M | 22. 13
M |
| 3 | | | | | | | | |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|---|--|--|--|--|---|---|---|---|---|
| 9
2
4
3
9
6
4
3
9
9
4
4
1
6
4
4
1
9
4
4
2
3
4
4
4
3
4
4
4
6
4
4
5 | 8
11
9
12
16
17
1
5 | xiiij
xvj
xxiiij
xxvij
xj
xxij
xxvj
x | 6 A
3 A
26 M
23 M
8 A
28 M
24 M
9 A | g f
c
c b
f
A
d
g
b | 7 A
4 A
27 M
24 M
9 A
29 M
25 M
10 A | vj
ix
xvij
xx
iiij
xv
xix
iiij | 7 A
4 A
27 M
24 M
9 A
29 M
25 M
10 A | 14 A
11 A
3 A
31 M
16 A
5 A
1 A
17 A | 7. 2 A
4. 17
A
27. 3
M
24. 18
M
9. 7 A
29. 8
M
25. 23
M
10. 12
A |

| Aur
n .
n Nu
i m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ Dom. | Pasch
a Vietæ | Epact
. Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
. medi
æ |
|----------------------------|-----------------|----------------------|-----------------|------------------|------------------|------------------------|-----------------------|----------------------|
| 0 | | | | | | | | |
| 4 6
4
7
0 | xxj | 29 M | e | 30 M | xiiij | 30 M | 6 A | 30. 13
M |
| 4 10
4
7
4 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 2
A |
| 4 11
4
9
4 | xvj | 3 A | c | 4 A | ix | 4 A | 11 A | 4. 3 A |
| 4 12
5
1
4 | xxvj | 24 M | g | 25 M | xix | 25 M | 1 A | 25. 5
M |
| 4 1
5
4
1 | xxv | 25 M | A | 26 M | xviiij | 26 M | 2 A | 26. 10
M |
| 4 6
5
6
5 | xx | 30 M | f | 31 M | xiiij | 31 M | 7 A | 31. 0
M |
| 4 2
5
9
9 | vj | 13 A | f | 14 A | xxix | 14 A | 21 A | 14. 9
A |
| 4 5
6
0
2 | ix | 10 A | c | 11 A | ij | 11 A | 18 A | 12. 0
A |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|------------------|----------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 4
6
2
2 | 6 | xx | 30 M | f | 31 M | xiiij | 31 M | 7 A | 1. 2 A |
| 4
6
2
6 | 10 | iiij | 15 A | A | 16 A | xxviij | 16 A | 23 A | 16. 14
A |
| 4
6
4
6 | 11 | xv | 4 A | d | 5 A | viiij | 5 A | 12 A | 5. 16
A |
| 4
6
6
6 | 12 | xxvj | 24 M | g | 25 M | xix | 25 M | 1 A | 25. 17
M |
| 4
6
7
0 | 16 | x | 9 A | b | 10 A | iiij | 10 A | 17 A | 10. 6
A |
| 4
6
9
0 | 17 | xxj | 29 M | e | 30 M | xiiiij | 30 M | 6 A | 30. 7
M |
| 4
6
9
3 | 1 | xxv | 25 M | A | 26 M | xviiij | 26 M | 2 A | 26. 22
M |
| 4
7
1
7 | 6 | xix | 31 M | g | 1 A | xij | 1 A | 8 A | 1. 12
A |
| 4 | 10 | iiij | 16 A | b | 17 A | xxvj | 17 A | 24 A | 17. 1 |

| A
n
n
i | Aur
. Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ Dom. | Pasch
a Vietæ | Epact
. Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor.
. | Oppos
. medi
æ |
|------------------|-------------------|-----------------|----------------------|-----------------|------------------|------------------|------------------------|------------------------|----------------------|
| 7
2
1 | | | | | | | | | A |
| 4
7
4
1 | 11 | xiiij | 5 A | e | 6 A | vij | 6 A | 13 A | 6. 3 A |
| 4
7
5
1 | 2 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 22
A |
| 4
7
6
1 | 12 | xxv | 25 M | A | 26 M | xviiij | 26 M | 2 A | 26. 4
M |
| 4
7
7
1 | 3 | xvj | 3 A | c | 4 A | ix | 4 A | 11 A | 4. 23
A |
| 4
7
8
8 | 1 | xxiiij | 26 M | c b | 27 M | xvij | 27 M | 3 A | 27. 9
M |
| 4
7
9
1 | 4 | xxviij | 23 M | f | 24 M | xx | 24 M | 31 M | 25. 0
M |
| 4
7
9
5 | 8 | xj | 8 A | A | 9 A | iiij | 9 A | 16 A | 9. 13
A |
| 4
8 | 9 | xxij | 28 M | d | 29 M | xv | 29 M | 5 A | 29. 14
M |

| A
n
n
i | Aur
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|----------------------------|-----------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 1
5
4
8
1
9 | 13 | vj | 13 A | f | 14 A | xxix | 14 A | 21 A | 14. 3
A |
| 4
8
3
9 | 14 | xvij | 2 A | b | 3 A | x | 3 A | 10 A | 3. 4 A |
| 4
8
5
9 | 15 | xxviii | 22 M | e | 23 M | xxj | 23 M | 30 M | 23. 6
M |
| 4
8
6
6 | 3 | xvj | 3 A | c | 4 A | ix | 4 A | 11 A | 4. 10
A |
| 4
8
8
6 | 4 | xxvij | 23 M | f | 24 M | xx | 24 M | 31 M | 24. 11
M |
| 4
8
9
0 | 8 | xj | 8 A | A | 9 A | iii | 9 A | 16 A | 9. 0 A |
| 4
9
0
3 | 2 | v | 14 A | g | 15 A | xxviii | 15 A | 22 A | 16. 10
A |
| 4
9
1 | 12 | xxv | 25 M | A | 26 M | xviii | 26 M | 2 A | 26. 16
M |

| A
n
n
i | Aur
.
Nu
m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|------------------|----------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 3 | | | | | | | | | |
| 4
9
1
7 | 16 | ix | 10 A | c | 11 A | ij | 11 A | 18 A | 11. 5
A |
| 4
9
2
3 | 3 | xvj | 3 A | c | 4 A | ix | 4 A | 11 A | 5. 11
A |
| 4
9
3
7 | 17 | xx | 30 M | f | 31 M | xij | 31 M | 7 A | 31. 6
M |
| 4
9
4
3 | 4 | xxvij | 23 M | f | 24 M | xx | 24 M | 31 M | 25. 13
M |
| 4
9
4
4 | 5 | viiij | 11 A | e d | 12 A | j | 12 A | 19 A | 12. 10
A |
| 4
9
4
7 | 8 | xj | 8 A | A | 9 A | iiiij | 9 A | 16 A | 10. 1
A |
| 4
9
6
4 | 6 | xix | 31 M | A g | 1 A | xij | 1 A | 8 A | 1. 11
A |
| 4
9
6
7 | 9 | xxij | 28 M | d | 29 M | xv | 29 M | 5 A | 30. 3
M |

| Aur
n .
n Nu
i m. | Epact.
Vietæ | Lun. xiiij.
Vietæ | Liter
æ
Dom. | Pasch
a
Vietæ | Epact
.
Greg. | Lunæ xiiij.
Gregor. | Pascha
Gregor
. | Oppos
.
medi
æ |
|----------------------------|-----------------|----------------------|--------------------|---------------------|---------------------|------------------------|-----------------------|-------------------------|
| 4 10
9
6
8 | iiij | 16 A | c b | 17 A | xxvj | 17 A | 24 A | 17. 0
A |
| 4 13
9
7
1 | vj | 13 A | f | 14 A | xxix | 14 A | 21 A | 14. 15
A |
| 4 11
9
8
8 | xiiij | 5 A | f e | 6 A | vij | 6 A | 13 A | 6. 2 A |
| 4 14
9
9
1 | xvij | 2 A | b | 3 A | x | 3 A | 10 A | 3. 17
A |
| 4 2
9
9
8 | v | 14 A | g | 15 A | xxviiij | 15 A | 22 A | 15. 21
A |

Below the table, on folio 524, Clavius draws the moral (main text, folio 524):

In all these years you can see plainly that the Easter of Viète's calendar is celebrated **before the mean full moon** — from which, as is only proper, it shrinks back sharply, since the Councils and the Canons forbid it. Among these years you will find **17** in which the mean opposition falls either at noon, or a few hours after noon, of the very day that Easter follows — namely 3705, 3763, 3783, 3800, 4010, 4030, 4199, 4351, 4375, 4602, 4622, 4791, 4903, 4923, 4943, 4947, 4967. But this can in no way be tolerated in the Church of God.

You will also find **45** years — namely 3411, 3442, 3455, 3462, 3482, 3553, 3709, 3729, 3787, 3827, 3858, 3878, 4003, 4034, 4054, 4074, 4115, 4200, 4203, 4223, 4301, 4321, 4351, 4355, 4372, 4379, 4392, 4399, 4419, 4446, 4450, 4470, 4626, 4646, 4666, 4693, 4717, 4751, 4771, 4795, 4815, 4913, 4971, 4991, 4998 — in which the mean

opposition is found to fall after the midnight that opens Easter day; and this is almost equally absurd. In only 5 of these 45 — namely 3455, 3858, 4372, 4450, 4717 — does the mean opposition run into the midnight after Easter day, but no later; and this too is utterly absurd. In the remaining years of this table the mean opposition is seen to fall after the noon of Easter day — indeed in 25 years after sunset as well, and in 8 at the very moment of sunset. In the remaining 30 years, finally — which is more tolerable — it falls after noon but before sunset, or at noon itself. Since, then, in all the aforesaid years the Easter laid down in the Gregorian calendar is the one to be celebrated in accordance with the Decrees of the Fathers, will anyone doubt that the Gregorian calendar is to be preferred to Viète's, spattered as it is with so many errors?

[Margin: That Viète, following the earlier table of the equation, not infrequently celebrates Easter in the second month.]

I could review here a good many other years in which Viète, following this same earlier table of the equation, celebrates Easter in the **last month of the year** — that is, when the mean paschal opposition is not in March but in April, since the April one falls before 19 April, while the March one precedes 22 March. But since this fault too has crept into the **later** table of the equation, I shall put it off to the examination of that later table. Only this ought not to be passed over here: that, following the earlier table of the equation, I have found not a few years in which Easter is kept in the **second month** — that is, in which the mean paschal opposition is not the April one but the March one, since the March one occurs on 22 March, while the April one falls after 19 April. By way of example, take the following 18 years.

The eighteen exemplary years (folio 524)

A

n Aur.

| n | Nu | Epac. | Nouilu. | Opposit. mediæ | Epa. | Nouilu. | Opposit. mediæ |
|---|----|-------|---------|----------------|-------|---------|----------------|
| i | m. | Vietæ | Vietæ | in Aprili | Gre. | Greg. | in Martio |
| 3 | 12 | j | 5 A | 20. 5 A | xxiij | 8 M | 21. 16 M |
| 5 | | | | | | | |
| 0 | | | | | | | |
| 7 | | | | | | | |
| 3 | 12 | j | 5 A | 19. 22 A | xxiij | 8 M | 21. 9 M |
| 5 | | | | | | | |
| 2 | | | | | | | |

| A | | | | | | | | |
|--------|----|-------|---------|----------------|-------|---------|----------------|--|
| n Aur. | | | | | | | | |
| i | Nu | Epac. | Nouilu. | Oppofit. mediæ | Epa. | Nouilu. | Oppofit. mediæ | |
| m. | | Vietæ | Vietæ | in Aprili | Gre. | Greg. | in Martio | |
| 6 | | | | | | | | |
| 3 | 12 | j | 5 A | 19. 14 A | xxiij | 8 M | 21. 1 M | |
| 5 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 3 | 12 | j | 5 A | 19. 23 A | xxiij | 8 M | 21. 10 M | |
| 5 | | | | | | | | |
| 8 | | | | | | | | |
| 3 | | | | | | | | |
| 3 | 12 | j | 5 A | 19. 19 A | xxiij | 8 M | 21. 6 M | |
| 7 | | | | | | | | |
| 1 | | | | | | | | |
| 6 | | | | | | | | |
| 3 | 12 | j | 5 A | 20. 12 A | xxiij | 8 M | 21. 23 M | |
| 7 | | | | | | | | |
| 3 | | | | | | | | |
| 5 | | | | | | | | |
| 3 | 12 | j | 5 A | 20. 4 A | xxiij | 8 M | 21. 15 M | |
| 7 | | | | | | | | |
| 5 | | | | | | | | |
| 4 | | | | | | | | |
| 3 | 12 | j | 5 A | 19. 21 A | xxiij | 8 M | 21. 8 M | |
| 7 | | | | | | | | |
| 7 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | 15 | j | 5 A | 19. 17 A | xxiij | 8 M | 21. 4 M | |
| 2 | | | | | | | | |
| 5 | | | | | | | | |
| 1 | | | | | | | | |
| 4 | 15 | j | 5 A | 19. 19 A | xxiij | 8 M | 21. 6 M | |
| 3 | | | | | | | | |
| 0 | | | | | | | | |
| 8 | | | | | | | | |

| A
n
i | n Aur. | | | | | | |
|------------------|----------|----------------|------------------|-----------------------------|--------------|------------------|-----------------------------|
| | Nu
m. | Epac.
Vietæ | Nouilu.
Vietæ | Oppofit. mediæ
in Aprili | Epa.
Gre. | Nouilu.
Greg. | Oppofit. mediæ
in Martio |
| 4
3
2
7 | 15 | j | 5 A | 20. 12 A | xxiij | 8 M | 21. 23 M |
| 4
3
4
6 | 15 | j | 5 A | 20. 4 A | xxiij | 8 M | 21. 15 M |
| 4
3
6
5 | 15 | j | 5 A | 19. 21 A | xxiij | 8 M | 21. 8 M |
| 4
4
0
3 | 15 | j | 5 A | 20. 6 A | xxiij | 8 M | 21. 17 M |
| 4
4
2
2 | 15 | j | 5 A | 19. 22 A | xxiij | 8 M | 21. 9 M |
| 4
4
4
1 | 15 | j | 5 A | 19. 15 A | xxiij | 8 M | 21. 2 M |
| 4
4
7
9 | 15 | j | 5 A | 20. 0 A | xxiij | 8 M | 21. 11 M |
| 4
4
9
8 | 15 | j | 5 A | 19. 16 A | xxiij | 8 M | 21. 3 M |

Does not this table plainly teach us that the Gregorian calendar keeps Easter more correctly in March throughout those 18 years than Viète's [Vietæum] does in April? For the mean oppositions fall in March after noon on the 21st, and so belong to the 22nd, and are therefore Paschal; whereas in April they fall after noon on the 19th, and hence are not Paschal. So much for what has been said against the earlier equation table; let us now turn to the later one.

But first Viète's rule must be set out — the one by which he finds the epact of any year — lest anyone should perhaps suppose that I am not bringing his true epacts to the test. In Proposition 39, then, he hands down this rule:

From the proposed number of the years of Christ reckoned in centuries, cast out 1500; and however many times 400 is contained in the remainder, take that many sets of three days; and if, when the division is done, two centuries are left over, take one day, and if three, take two. Collect what you have taken, and call them the additive days [dies addituios]. Next, from the proposed number of years from the Era of Christ reckoned in centuries, cast out 1800, and keep one day; and however many times 2500 is contained in the remainder, take that many sets of eight days; and however many times 300 is contained in the further remainder when the division is done, take that many single days. Collect these together with the one you kept, and call them the subtractive days [dies ablatuios]. If you cannot cast out 1800, count no subtractive day. Finally, take the excess of the additive days over the subtractive days, and count it off from March 8th exclusive; and the day on which the counting ends will give the epact under golden number 2. If the centuries run on, so that the excess mounts up to whole periods of the annual Julian days, let these be carried round: first by division by the quadrennia, that is by 1461 days, then by the common years, that is by 365 days. And let the root of the golden number, which is set at 2, receive an increment of as many units as there are annual periods. And by however many periods of 2500 years there are, by that many sets of eight days, and by however many further periods of 300 years, by that many single days, let the excess be diminished.

Let us clarify this rule with examples.

I seek the epact for the century-year 17600. Casting out 1500, there remain 16100. Dividing by 400 gives a quotient of 40, with 100 left over. Multiply the quotient 40 by 3: you get 120 additive days. For nothing more is added here, since fewer than 200 years were left over. Again, from the same century-year 17600, casting out 1800, there remain 15800; and when these are divided by 2500, the quotient comes out as 6, with 800 remaining. Multiplying the quotient 6 by 8 gives 48; and adding 2 — because 300 is contained twice in the remainder 800 — makes 50; and

with the further addition of the single unit which Viète said must be kept, it makes 51. Subtracted from the 120 additive days, this leaves 69. Therefore the 69th day after March 8th — that is, May 16th — yields epact 19 [xix] under golden number 3. And golden number 4, for the year 17616, will give in the table of the Cycle of Epacts the epact ♦, that is, 29 [xxix].

I seek again the epact for the century-year 109500. (The three following examples are Viète's own.) The excess of the additive days over the subtractive is 465. I carry round 365 once, and 100 remain. Therefore the 100th day after March 8th will give epact 18 [xviii] under golden number 4 — because 1 is added to 3, on account of the one period contained in the excess.

Likewise for the year 218000. The excess of the additive days over the subtractive is 930. I carry round 365 twice, and 200 remain. Therefore the 200th day after March 8th will give epact 6 [vi] under golden number 5 — because 2 is added to 3, on account of the two periods comprised in the excess; and so epact 15 [xv] will belong to golden number 14 of the given year.

Finally, let the century-year 165580200 be given. The excess of the additive days over the subtractive is 711988. I divide by 1461: 487 come out, with 481 remaining; and dividing these by 365 gives 1, with 116 remaining. And because 487 multiplied by 4 makes 1948 annual periods, with the addition of 1 there are gathered 1949 annual periods in the excess, and 116 remain. But since 300 is contained six times in 1949 annual periods, 6 must be taken from the remainder 116, so that 110 remain. Therefore the 110th day after March 8th gives epact 8 [viii] under golden number 14. For if from the 1949 years I carry round the 19-year cycle as many times as I can, 11 are left over, to be added to golden number 3 [giving 14]. Therefore epact 2 [ii] is due to golden number 8 of the proposed year.

And this is Viète's rule, differing somewhat from ours, which we set out in Chapter 12, Number 10. Let us now come to the examination of Viète's epacts, and look a little more carefully into whether Viète has really been such an accurate Sosigenes as he wishes to appear — he who promised that he would supply everything which, as he puts it, the Gregorian Sosigenes were unable to supply.

In the first place, then, I shall set out a good many years, gathered by me here and there in passing, in which the later equation table makes Easter fall to be celebrated in the last month of the year, as the following table shows. And we sometimes bring forward rather distant years, because Viète too, in attacking the

Gregorian calendar, casts up against us years very far removed — so that he may understand that he has taken no greater care for posterity than we have.

[Margin: Viète, by the later equation, more often celebrates Easter in the last month.]

Table 1 — Years in which Viète's later equation places Easter in the last (Gregorian) month (p. 525; table continues on pp. 526–527).

Column headers as printed: *Anni* (years) | *Aurei Numeri* (golden number) | *Epacta Vietæ* (Viète's epact) | *Oppos. med. in Mart. non Paschalis* (mean opposition in March, non-Paschal; set day · hour · M[artij]) | *Epacta Greg.* (Gregorian epact). The source sets the table in two side-by-side blocks per page; rows below are the left block first, then the right block.

| An
ni | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|----------|---------------|--------------|---------------------------------------|--------------|
| 19
05 | 6 | xxix | 20. 12. M | xxiiii |
| 19
24 | 6 | xxix | 20. 5. M | xxiiii |
| 19
43 | 6 | xxix | 20. 21. M | xxiiii |
| 19
62 | 6 | xxix | 20. 14. M | xxiiii |
| 19
81 | 6 | xxix | 20. 7. M | xxiiii |
| 20
00 | 6 | xxix | 19. 23. M | xxiiii |
| 20
38 | 6 | xxix | 20. 8. M | xxiiii |
| 20
57 | 6 | xxix | 20. 1. M | xxiiii |
| 20
76 | 6 | xxix | 19. 17. M | xxiiii |
| 20
95 | 6 | xxix | 20. 10. M | xxiiii |
| 21 | 6 | xxix | 20. 19. M | xxiiii |

| An
ni | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|----------|---------------|--------------|---------------------------------------|--------------|
| 33 | | | | |
| 21 | 6 | xxix | 20. 11. M | xxiiii |
| 52 | | | | |
| 21 | 6 | xxix | 20. 21. M | xxiiii |
| 90 | | | | |
| 26 | 9 | xxix | 20. 8. M | xxiiii |
| 30 | | | | |
| 26 | 9 | xxix | 20. 1. M | xxiiii |
| 49 | | | | |
| 26 | 9 | xxix | 20. 7. M | xxiiii |
| 68 | | | | |
| 26 | 9 | xxix | 20. 10. M | xxiiii |
| 87 | | | | |
| 27 | 9 | xxix | 20. 19. M | xxiiii |
| 25 | | | | |
| 27 | 9 | xxix | 20. 11. M | xxiiii |
| 44 | | | | |
| 27 | 9 | xxix | 20. 4. M | xxiiii |
| 63 | | | | |
| 27 | 9 | xxix | 20. 20. M | xxiiii |
| 82 | | | | |
| 28 | 9 | xxix | 20. 13. M | xxiiii |
| 01 | | | | |
| 28 | 9 | xxix | 20. 4. M | xxiiii |
| 20 | | | | |
| 28 | 9 | xxix | 20. 22. M | xxiiii |
| 39 | | | | |

Table 1, continued (p. 526). Same columns; left block first, then right block.

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|----------|---------------|--------------|---------------------------------------|--------------|
| 285 | 9 | xxix | 20. 15. M | xxiiii |
| 8 | | | | |

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|----------|---------------|--------------|---------------------------------------|--------------|
| 287
7 | 9 | xxix | 20. 7. M | xxiiii |
| 289
6 | 9 | xxix | 20. 0. M | xxiiii |
| 311
6 | 1 | xxix | 20. 17. M | xxiiii |
| 317
3 | 1 | xxix | 20. 19. M | xxiiii |
| 319
2 | 1 | xxix | 20. 12. M | xxiiii |
| 323
0 | 1 | xxix | 20. 20. M | xxiiii |
| 324
9 | 1 | xxix | 20. 13. M | xxiiii |
| 326
8 | 1 | xxix | 20. 6. M | xxiiii |
| 328
7 | 1 | xxix | 20. 22. M | xxiiii |
| 334
4 | 1 | xxix | 20. 23. M | xxiiii |
| 338
2 | 1 | xxix | 20. 9. M | xxiiii |
| 382
2 | 4 | xxix | 20. 21. M | xxiiii |
| 384
1 | 4 | xxix | 20. 13. M | xxiiii |
| 386
0 | 4 | xxix | 20. 6. M | xxiiii |
| 387
9 | 4 | xxix | 20. 22. M | xxiiii |
| 389
8 | 4 | xxix | 20. 15. M | xxiiii |
| 393 | 4 | xxix | 20. 23. M | xxiiii |

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|----------|---------------|--------------|---------------------------------------|--------------|
| 6 | | | | |
| 397 | 4 | xxix | 20. 9. M | xxiiii |
| 4 | | | | |
| 401 | 4 | xxix | 20. 18. M | xxiiii |
| 2 | | | | |
| 406 | 4 | xxix | 20. 20. M | xxiiii |
| 9 | | | | |
| 408 | 4 | xxix | 20. 12. M | xxiiii |
| 8 | | | | |
| 450 | 7 | xxix | 20. 7. M | xxiiii |
| 9 | | | | |
| 452 | 7 | xxix | 20. 0. M | xxiiii |
| 8 | | | | |
| 454 | 7 | xxix | 20. 17. M | xxiiii |
| 7 | | | | |
| 456 | 7 | xxix | 20. 9. M | xxiiii |
| 6 | | | | |
| 458 | 7 | xxix | 20. 1. M | xxiiii |
| 5 | | | | |
| 460 | 7 | xxix | 20. 18. M | xxiiii |
| 4 | | | | |
| 466 | 7 | xxix | 20. 20. M | xxiiii |
| 1 | | | | |
| 468 | 7 | xxix | 20. 12. M | xxiiii |
| 0 | | | | |
| 510 | 10 | xxix | 20. 7. M | xxiiii |
| 1 | | | | |
| 512 | 10 | xxix | 20. 0. M | xxiiii |
| 0 | | | | |
| 513 | 10 | xxix | 20. 16. M | xxiiii |
| 9 | | | | |
| 515 | 10 | xxix | 20. 9. M | xxiiii |
| 8 | | | | |

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|-----------|---------------|--------------|---------------------------------------|--------------|
| 531
0 | 10 | xxix | 20. 21. M | xxiiii |
| 701
8 | 8 | xxix | 20. 15. M | xxiiii |
| 703
7 | 8 | xxix | 20. 8. M | xxiiii |
| 705
6 | 8 | xxix | 20. 1. M | xxiiii |
| 707
5 | 8 | xxix | 20. 17. M | xxiiii |
| 709
4 | 8 | xxix | 20. 10. M | xxiiii |
| 713
2 | 8 | xxix | 20. 19. M | xxiiii |
| 718
9 | 8 | xxix | 20. 20. M | xxiiii |
| 720
8 | 8 | xxix | 20. 13. M | xxiiii |
| 724
6 | 8 | xxix | 20. 22. M | xxiiii |
| 726
5 | 8 | xxix | 20. 15. M | xxiiii |
| 728
4 | 8 | xxix | 20. 7. M | xxiiii |
| 157
18 | 6 | xxix | 20. 12. M | xxiiii |
| 157
37 | 6 | xxix | 20. 5. M | xxiiii |
| 157
56 | 6 | xxix | 19. 21. M | xxiiii |
| 157
75 | 6 | xxix | 20. 14. M | xxiiii |
| 157 | 6 | xxix | 20. 6. M | xxiiii |

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|-----------|---------------|--------------|---------------------------------------|--------------|
| 94 | | | | |
| 158
13 | 6 | xxix | 20. 23. M | xxiiii |
| 158
32 | 6 | xxix | 20. 15. M | xxiiii |
| 158
89 | 6 | xxix | 20. 17. M | xxiiii |
| 163
10 | 9 | xxix | 20. 12. M | xxiiii |
| 163
29 | 9 | xxix | 20. 5. M | xxiiii |
| 163
48 | 9 | xxix | 19. 21. M | xxiiii |
| 163
67 | 9 | xxix | 20. 16. M | xxiiii |
| 163
86 | 9 | xxix | 20. 6. M | xxiiii |
| 175
21 | 4 | xxix | 20. 17. M | xxiiii |
| 175
40 | 4 | xxix | 20. 10. M | xxiiii |
| 175
78 | 4 | xxix | 20. 19. M | xxiiii |
| 175
97 | 4 | xxix | 20. 11. M | xxiiii |
| 176
16 | 4 | xxix | 20. 4. M | xxiiii |
| 176
35 | 4 | xxix | 20. 20. M | xxiiii |
| 176
54 | 4 | xxix | 20. 13. M | xxiiii |
| 176
73 | 4 | xxix | 20. 5. M | xxiiii |

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|-----------|---------------|--------------|---------------------------------------|--------------|
| 176
92 | 4 | xxix | 19. 22. M | xxiiii |
| 177
49 | 4 | xxix | 20. 23. M | xxiiii |
| 177
68 | 4 | xxix | 20. 16. M | xxiiii |
| 190
09 | 10 | xxix | 20. 18. M | xxiiii |
| 190
28 | 10 | xxix | 19. 10. M | xxiiii |
| 190
66 | 10 | xxix | 20. 20. M | xxiiii |
| 190
85 | 10 | xxix | 20. 12. M | xxiiii |
| 207
17 | 8 | xxix | 20. 12. M | xxiiii |
| 207
36 | 8 | xxix | 20. 4. M | xxiiii |
| 207
55 | 8 | xxix | 20. 21. M | xxiiii |
| 207
74 | 8 | xxix | 20. 13. M | xxiiii |
| 207
93 | 8 | xxix | 20. 6. M | xxiiii |
| 209
45 | 8 | xxix | 20. 18. M | xxiiii |
| 209
64 | 8 | xxix | 20. 11. M | xxiiii |
| 294
17 | 6 | xxix | 20. 8. M | xxiiii |
| 294
36 | 6 | xxix | 20. 1. M | xxiiii |
| 294 | 6 | xxix | 20. 18. M | xxiiii |

| Ann
i | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|-----------|---------------|--------------|---------------------------------------|--------------|
| 55 | | | | |
| 294
74 | 6 | xxix | 20. 10. M | xxiiii |
| 294
93 | 6 | xxix | 20. 3. M | xxiiii |
| 296
26 | 6 | xxix | 20. 22. M | xxiiii |
| 296
45 | 6 | xxix | 20. 15. M | xxiiii |
| 296
64 | 6 | xxix | 20. 7. M | xxiiii |
| 301
04 | 9 | xxix | 19. 19. M | xxiiii |
| 301
23 | 9 | xxix | 20. 12. M | xxiiii |
| 301
42 | 9 | xxix | 20. 4. M | xxiiii |
| 301
61 | 9 | xxix | 19. 21. M | xxiiii |
| 301
80 | 9 | xxix | 19. 13. M | xxiiii |
| 301
99 | 9 | xxix | 20. 6. M | xxiiii |
| 302
18 | 9 | xxix | 20. 22. M | xxiiii |

Table 1, continued and concluded (p. 527). Same columns; left block first, then right block.

| Anni | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|-------|---------------|--------------|---------------------------------------|--------------|
| 30237 | 9 | xxix | 20. 15. M | xxiiii |
| 30256 | 9 | xxix | 20. 7. M | xxiiii |
| 30275 | 9 | xxix | 20. 23. M | xxiiii |

| Anni | Aurei
Num. | Epacta Vietæ | Oppos. med. in Mart. non
Paschalis | Epacta Greg. |
|-------------|---------------|--------------|---------------------------------------|--------------|
| 30294 | 9 | xxix | 20. 16. M | xxiiii |
| 31334 | 4 | xxix | 20. 17. M | xxiiii |
| 31353 | 4 | xxix | 20. 9. M | xxiiii |
| 31372 | 4 | xxix | 20. 2. M | xxiiii |
| 31391 | 4 | xxix | 20. 18. M | xxiiii |
| 31448 | 4 | xxix | 20. 20. M | xxiiii |
| 31926 | 7 | xxix | 20. 17. M | xxiiii |
| 31945 | 7 | xxix | 20. 9. M | xxiiii |
| 31964 | 7 | xxix | 20. 2. M | xxiiii |
| 31983 | 7 | xxix | 20. 18. M | xxiiii |
| 32002 | 7 | xxix | 20. 11. M | xxiiii |
| 32021 | 7 | xxix | 20. 3. M | xxiiii |
| 32040 | 7 | xxix | 19. 20. M | xxiiii |
| 32059 | 7 | xxix | 20. 12. M | xxiiii |
| 32078 | 7 | xxix | 20. 5. M | xxiiii |
| 32097 | 7 | xxix | 19. 21. M | xxiiii |
| 32116 | 7 | xxix | 20. 14. M | xxiiii |
| 32154 | 7 | xxix | 20. 23. M | xxiiii |
| 32173 | 7 | xxix | 20. 16. M | xxiiii |
| 32192 | 7 | xxix | 20. 8. M | xxiiii |
| [blank
] | [blank] | xxix | [blank] | [blank] |

It is clear from this table that none of the mean oppositions listed in it is Paschal, since none reaches March 22nd; and therefore Viète keeps Easter in the last month. More admirably, then, has it been managed in the Gregorian calendar, which in the aforesaid years throws Easter into April — the month that is then the first of the lunar year.

I am aware that the same error sometimes creeps into our own calendar as well; but since this very rarely happens, whereas it occurs most frequently in Viète's calendar, the Gregorian calendar is, by the fullest right, to be preferred to Viète's.

And since Viète speaks so grandly of his own calendar that he does not shrink from boldly asserting that the 15th moons of his epacts never coincide with the Judaic 14ths, let us see whether this holds true in every case. Certainly, in the years of the following table, I find that his 15th moon does not differ from the true or Judaic 14th — the very 14th that the Gregorian calendar also displays — inasmuch as it precedes the mean opposition. From this it follows that he celebrates Easter before the full moon whenever his 15th moon falls on a Sunday, which indeed happens in the years 13706 and 14917. In the other years, although the dominical letter corrects this error — since in them the 15th moon does not fall on a Sunday — nevertheless by their own nature those 15th moons are faulty, as the computists teach.

[Margin: Viète very often shows 15th moons before their lawful time.]

Table 2 — Years in which Viète's 15th moon coincides with the true (Judaic/Gregorian) 14th (p. 527).

Column headers as printed: *Anni* (years) | *Aur. Num.* (golden number) | *Epac. Vie.* (Viète's epact) | *xiiij. Vie.* (Viète's 14th moon) | *Epa. Gre.* (Gregorian epact) | *xiiij. Gre.* (Gregorian 14th moon) | *Opposit. med.* (mean opposition). The 14th-moon and opposition cells are set day · [hour ·] letter, the letter being A[prilis].

| An
ni | Aur.
Num. | Epac. Vie. | xiiij. Vie. | Epa.
Gre. | xiiij. Gre. | Opposit. med. |
|-----------|--------------|------------|-------------|--------------|-------------|---------------|
| 110
07 | 7 | ii | 17 A | xxv | 18 A | 18. 0. A |
| 111
02 | 7 | ii | 17 A | xxv | 18 A | 18. 7. A |
| 111
21 | 7 | ii | 17 A | xxv | 18 A | 18. 3. A |
| 111
59 | 7 | ii | 17 A | xxv | 18 A | 18. 12. A |
| 111
78 | 7 | ii | 17 A | xxv | 18 A | 18. 5. A |
| 112
35 | 7 | ii | 17 A | xxv | 18 A | 18. 7. A |
| 135
35 | 8 | ii | 17 A | xxv | 18 A | 18. 1. A |
| 137 | 8 | ii | 17 A | xxv | 18 A | 18. 6. A |

| An
ni | Aur.
Num. | Epac. Vie. | xiiiij. Vie. | Epa.
Gre. | xiiiij. Gre. | Opposit. med. |
|-----------|--------------|------------|--------------|--------------|--------------|---------------|
| 06 | | | | | | |
| 137
63 | 8 | ii | 17 A | xxv | 18 A | 18. 7. A |
| 147
27 | 3 | ii | 17 A | xxv | 18 A | 18. 13. A |
| 147
46 | 3 | ii | 17 A | xxv | 18 A | 18. 6. A |
| 148
03 | 3 | ii | 17 A | xxv | 18 A | 18. 8. A |
| 148
22 | 3 | ii | 17 A | xxv | 18 A | 18. 0. A |
| 148
79 | 3 | ii | 17 A | xxv | 18 A | 18. 2. A |
| 149
17 | 3 | ii | 17 A | xxv | 18 A | 18. 11. A |
| 149
55 | 3 | ii | 17 A | xxv | 18 A | 18. 20. A |
| 149
74 | 3 | ii | 17 A | xxv | 18 A | 18. 13. A |
| 149
93 | 3 | ii | 17 A | xxv | 18 A | 18. 5. A |
| 222
35 | 6 | ii | 17 A | xxv | 18 A | 18. 5. A |
| 224
06 | 6 | ii | 17 A | xxv | 18 A | 18. 2. A |
| 224
63 | 6 | ii | 17 A | xxv | 18 A | 18. 4. A |
| 241
71 | 4 | ii | 17 A | xxv | 18 A | 18. 0. A |
| 285
59 | 3 | ii | 17 A | xxv | 18 A | 18. 6. A |
| 285
97 | 3 | ii | 17 A | xxv | 18 A | 18. 13. A |

| An
ni | Aur.
Num. | Epac. Vie. | xiiij. Vie. | Epa.
Gre. | xiiij. Gre. | Opposit. med. |
|-----------|--------------|------------|-------------|--------------|-------------|---------------|
| 286
16 | 3 | ii | 17 A | xxv | 18 A | 18. 7. A |
| 286
35 | 3 | ii | 17 A | xxv | 18 A | 19. 0. A |
| 286
54 | 3 | ii | 17 A | xxv | 18 A | 18. 17. A |
| 286
73 | 3 | ii | 17 A | xxv | 18 A | 18. 9. A |
| 286
92 | 3 | ii | 17 A | xxv | 18 A | 18. 1. A |

Do you not see, Vieta, how much more correctly the epact 25 of the Gregorian Calendar indicates the 14th moon on the 18th of April than your epact 2 does on the 17th?

Moreover, in Vieta's Calendar it is not only the 14th moons that are found running ahead of the mean full moons more than is right, as is clear from the table above; there are also not a few that follow the mean oppositions further behind than is proper. This happens most of all when, in place of our epact 25 — set opposite the 26th, at the 4th of April — he adopts the epact 1, entered at the 5th in his own Calendar. From this too it may be plainly established that it was not without reason that we adopted the epact 25 marked with a different character and advanced up by one day, whenever the golden number is greater than 11 — which Vieta does not approve. That this is so, the table set out below makes most plainly clear.

Table (printed p. 528). Years in which Vieta's 14th moon and epact diverge from the Gregorian, with the mean opposition. The list is printed in two side-by-side panels (left panel first, then right panel); together they form a single continuous series. Column value 18 A = 14th moon on the 18th, ferial letter A; 17 A = 17th, letter A; the mean-opposition column is set day. hour. letter (e.g. 17. 5. A). The Vieta epact is the Roman-i epact 1; the Gregorian epact column is Arabic 25.

Left panel:

| An
ni | Aur.
Nu. | Epa. Vie. | xiiij. Vietę | Epa. Gre. | xiiij. Gre. | Opposit. med. |
|----------|-------------|-----------|--------------|-----------|-------------|---------------|
| 19 | 17 | i | 18 A | 25 | 17 A | 17. 5. A |

| An
ni | Aur.
Nu. | Epa. Vie. | xiiiij. Vietę | Epa. Gre. | xiiiij. Gre. | Opposit. med. |
|----------|-------------|-----------|---------------|-----------|--------------|---------------|
| 16 | | | | | | |
| 19
35 | 17 | i | 18 A | 25 | 17 A | 17. 22. A |
| 19
54 | 17 | i | 18 A | 25 | 17 A | 17. 14. A |
| 19
73 | 17 | i | 18 A | 25 | 17 A | 17. 19. A |
| 19
92 | 17 | i | 18 A | 25 | 17 A | 17. 23. A |
| 20
11 | 17 | i | 18 A | 15 | 17 A | 17. 16. A |
| 20
30 | 17 | i | 18 A | 25 | 17 A | 17. 8. A |
| 20
49 | 17 | i | 18 A | 25 | 17 A | 17. 1. A |
| 20
68 | 17 | i | 18 A | 25 | 17 A | 17. 17. A |
| 20
87 | 17 | i | 18 A | 25 | 17 A | 17. 16. A |
| 21
25 | 17 | i | 18 A | 25 | 17 A | 17. 19. A |
| 21
44 | 17 | i | 18 A | 25 | 17 A | 17. 13. A |
| 21
82 | 17 | i | 18 A | 25 | 17 A | 17. 21. A |
| 31
08 | 12 | i | 18 A | 25 | 17 A | 17. 18. A |
| 31
65 | 12 | i | 18 A | 25 | 17 A | 17. 19. A |
| 31
84 | 12 | i | 18 A | 25 | 17 A | 17. 12. A |
| 32
22 | 12 | i | 18 A | 25 | 17 A | 17. 21. A |

| An
ni | Aur.
Nu. | Epa. Vie. | xiiij. Vietę | Epa. Gre. | xiiij. Gre. | Opposit. med. |
|----------|-------------|-----------|--------------|-----------|-------------|---------------|
| 32
41 | 12 | i | 18 A | 25 | 17 A | 17. 13. A |
| 32
60 | 12 | i | 18 A | 25 | 17 A | 17. 6. A |
| 32
79 | 12 | i | 18 A | 25 | 17 A | 17. 22. A |
| 32
98 | 12 | i | 18 A | 25 | 17 A | 17. 15. A |
| 38
14 | 15 | i | 18 A | 25 | 17 A | 17. 21. A |
| 38
33 | 15 | i | 18 A | 25 | 17 A | 17. 13. A |
| 38
52 | 15 | i | 18 A | 25 | 17 A | 17. 6. A |

Right panel:

| An
ni | Aur.
Nu. | Epact. Vietæ | xiiij. Vie. | Epa.
Gre. | xiiij. Gre. | Opposit.
med. |
|----------|-------------|--------------|-------------|--------------|-------------|------------------|
| 387
1 | 15 | i | 18 A | 25 | 17 A | 17. 22. A |
| 389
0 | 15 | i | 18 A | 25 | 17 A | 17. 15. A |
| 400
4 | 15 | i | 18 A | 25 | 17 A | 17. 18. A |
| 406
1 | 15 | i | 18 A | 25 | 17 A | 17. 20. A |
| 408
0 | 15 | i | 18 A | 25 | 17 A | 17. 12. A |
| 450
1 | 18 | i | 18 A | 25 | 17 A | 17. 7. A |
| 452
0 | 18 | i | 18 A | 25 | 17 A | 17. 0. A |
| 453 | 18 | i | 18 A | 25 | 17 A | 17. 16. A |

| An
ni | Aur.
Nu. | Epact. Vietæ | xiiiij. Vie. | Epa.
Gre. | xiiiij. Gre. | Opposit.
med. |
|----------|-------------|--------------|--------------|--------------|--------------|------------------|
| 9 | | | | | | |
| 455 | 18 | i | 18 A | 25 | 17 A | 17. 9. A |
| 8 | | | | | | |
| 459 | 18 | i | 18 A | 25 | 17 A | 17. 18. A |
| 6 | | | | | | |
| 465 | 18 | i | 18 A | 25 | 17 A | 17. 20. A |
| 3 | | | | | | |
| 467 | 18 | i | 18 A | 25 | 17 A | 17. 12. A |
| 2 | | | | | | |
| 571 | 13 | i | 18 A | 25 | 17 A | 17. 12. A |
| 2 | | | | | | |
| 639 | 16 [?] | i | 18 A | 25 | 17 A | 17. 23. A |
| 9 | | | | | | |
| 176 | 14 | i | 18 A | 25 | 17 A | 17. 20. A |
| 27 | | | | | | |
| 182 | 18 | i | 18 A | 25 | 17 A | 17. 20. A |
| 19 | | | | | | |
| 184 | 18 | i | 18 A | 25 | 17 A | 17. 19. A |
| 66 | | | | | | |
| 201 | 16 | i | 18 A | 25 | 17 A | 17. 12. A |
| 17 | | | | | | |
| 207 | 19 | i | 18 A | 25 | 17 A | 17. 11. A |
| 09 | | | | | | |
| 209 | 19 | i | 18 A | 25 | 17 A | 17. 11. A |
| 56 | | | | | | |
| 294 | 17 | i | 18 A | 25 | 17 A | 17. 18. A |
| 47 | | | | | | |
| 296 | 17 | i | 18 A | 25 | 17 A | 17. 17. A |
| 94 | | | | | | |

From this pushing-back of Vieta's 14th moons it follows that Easter, falling on the 18th of April, if that is a Sunday, is deferred — against the decrees of the Fathers — to the 25th. This will happen in these 15 years: 1954, 2049, 3165, 3260, 3852, 4004, 6399, 17627, 18219, 18466, 20112, 20709, 20956, 29447, 29694. For in all of

these, by the prescription of the Gregorian Calendar, we celebrate Easter on the 18th of April — the Sunday, that is, next after the 14th moon, as the Canons command. But Vieta celebrates it on the 25th of April, because his 14th moon falls on the 18th of April, which is a Sunday.

All these errors I have observed in Vieta's Calendar as though at a glance through a lattice, ranging here and there over various years. I have no doubt that if anyone should choose to examine more years, he would detect more errors; but I judge that the ones I have noted are enough to show that Vieta's Calendar teems with far more faults than can be found in the Gregorian. Not that I therefore think the Gregorian Calendar is to be embraced, or defended by its assailants, on the ground that I suppose it to be immune and free from every error — for I have said again and again in what precedes that no cycle, however great the industry and skill with which it is arranged in a Civil Calendar, can avoid all inconveniences. I have frankly confessed that this applies to the Gregorian Calendar as well. This alone I strive for and maintain: that it contains fewer errors than other Calendars — which I believe is clear enough from the tables above. It can indeed happen that in a few particular years the epacts of Vieta's Calendar, or of any other, indicate the 14th moons more correctly than the epacts of the Gregorian Calendar; but since this happens rarely, I judge the Gregorian to be preferred above all — especially because in it (which is the chief point) nothing is innovated, but everything agrees with the ancient Ecclesiastical Calendar, save that you except the epacts, which have taken the place of the golden numbers. In vain, then, does Vieta labor, and in vain do others labor who try to overturn the Gregorian Calendar on account of a few little errors detected in it, when in other Calendars more errors, and graver ones, than in the Gregorian are to be found — even though, in order to avoid these (as they falsely suppose they do), they introduce, uselessly and without cause, intolerable novelties, unheard of in the Church of God down to the present day. Farewell, then, to the manifold [Greek: ἀταξία (ataxia, "disorder"), κ (?) (a second reproach ending in -ία, sense "absurdity/impropriety"; its medial cluster — a chi-like sort followed by a descending letter — does not resolve, so no reading is committed), κ ψευδοψηφοφορεία (kai pseudopsēphophoreia, "and false reckoning"); both connectives are set with this fount's κ (καί) ligature sort, kept as printed] of Vieta's Calendar, as we have shown. For these faults, which Vieta has hurled against our Calendar, fit far more aptly upon his own Calendar, as is clear from what we have shown.

14. Among the other matters that Vieta learnedly and subtly discusses in his new Calendar, he sets forth two propositions which I cannot approve in

every respect. The first is this. The Great Lunar Period embraces 3400 years, which in his proposition 31 he asserts happily and accurately restores the synodic months; and he calls it Gregorian, and new — the more new, he says, because I make no mention of it in my *Apologetics*. But how can I mention what does not exist, and is found in no author of weight? I do not indeed deny that this period comes very close to the truth; but that it accomplishes fully what it promises — this I flatly deny. For unless the lunar month is set at 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 43 fourths, and a little more, the lunations cannot be restored within 3400 years. Vieta himself even seems to affirm this, since in that passage he forbids the synodic month to be 29 days and 2[?]^{313/42052} — or, what is the same, 29 days and ⁵³⁰⁵⁹²³⁴⁸/₁₀₀₀₀₀₀₀₀₀. But by what authority he does this, I do not see. I find that there are in all three opinions about the motions of the heavens celebrated by all astronomers: the first is Ptolemy's, the second is contained in the Alphonsine Tables, and the third in the Prutenic. But neither Ptolemy, nor the tables — whether Alphonsine or Prutenic — set the lunar month at the value Vieta proposes to us on his own authority. For Ptolemy makes it greater, as do the Prutenic Tables, while the Alphonsine Tables make it smaller, as we explained in chapter 8. Certainly, if it were permitted to anyone to define the magnitude of the lunar month as he pleased, there would perhaps be no lack of someone to say that the lunar month is 29 days, 12 hours, 44 minutes, 25 seconds, and a little more. For on this assumption, 235 lunations would be accurately completed in 19 solar years. But in the schools this will not be granted unless it has been ascertained by long observation that the matter is so. Let Vieta, then, also bring forward by what observation he has learned that the lunar month is the one he foists upon us in his Great Lunar Period.

Vieta's second proposition is the following. From a bissextile century to a non-bissextile century, the progression of the new moons is 5 days, 8 hours, 13 scruples, 12 seconds. From the first non-bissextile to the second non-bissextile, the same progression. From the second again to the third, the same. But from the third non-bissextile to the fourth, a bissextile, the progression is 4 days, 8 hours, 13 scruples, 12 seconds. By this device, in proposition 36, he described the new moons for very many centuries, in which the aforesaid progression is seen; out of these I have selected these five. But whence he drew this reckoning, I do not know. For my part, from the reckoning I set out in chapter 13 out of the Prutenic Tables and of Giovanni Antonio Magini [Magini] — which Paul of Middelburg [Paulus Middelburgensis] also carefully transcribed — and from Vieta's own reckoning, which I shall append below, I have learned that this progression does

not hold together for him. For I find that from a bissextile century to the first non-bissextile century it is 6 days, 8 hours, 13 minutes, 30 seconds; from the first non-bissextile century to the second non-bissextile, 5 days, 8 hours, 13 minutes, 30 seconds; from the second again to the third, the same; but from the third non-bissextile to the fourth, a bissextile, that the progression is 3 days, 8 hours, 13 minutes, 30 seconds. The truth of this I have tested in various centuries widely distant from one another, out of which you see these five, the progression I have mentioned. Only in the minutes is a variation of one minute sometimes seen, so that 13 minutes are not always found — which happens on account of the seconds here neglected. This same progression is seen across the centuries if the lunations are computed by the method of the following chapter, drawn from Vieta, as will be evident if you care to test it.

[Margin: How great the progression of the new moons is from one century to another after the correction.]

Table (printed p. 529, at left). The progression of the new moons, after the correction, for the sample centuries. Columns: Anni | D. (days) | H. (hours) | M. (minutes) | Men. (month; Mar. = March).

| Anni | D. | H. | M. | Men. |
|------|----|----|----|------|
| 3200 | 7 | 17 | 56 | Mar. |
| 3300 | 13 | 2 | 9 | Mar. |
| 3400 | 18 | 10 | 23 | Mar. |
| 3500 | 23 | 18 | 37 | Mar. |
| 3600 | 28 | 2 | 50 | Mar. |

Table (printed p. 529). Sample new moons, 1600–2000. Men.: M = March (Martius), A = April (Aprilis).

| Anni | D. | H. | M. | Men. |
|------|----|----|----|------|
| 1600 | 14 | 8 | 35 | M |
| 1700 | 20 | 16 | 48 | M |
| 1800 | 26 | 1 | 2 | M |
| 1900 | 31 | 9 | 15 | M |
| 2000 | 3 | 17 | 29 | A |

Table (printed p. 529). Sample new moons, 10000–10400.

| Anni | D. | H. | M. | Men. |
|-------|----|----|----|------|
| 10000 | 28 | 17 | 12 | M |
| 10100 | 4 | 1 | 26 | A |
| 10200 | 9 | 9 | 39 | A |
| 10300 | 14 | 17 | 53 | A |
| 10400 | 18 | 2 | 6 | A |

Table (printed p. 529). Sample new moons, 20000–20400.

| Anni | D. | H. | M. | Men. |
|-------|----|----|----|------|
| 20000 | 6 | 10 | 30 | Mar. |
| 20100 | 12 | 18 | 43 | Mar. |
| 20200 | 18 | 2 | 57 | Mar. |
| 20300 | 23 | 11 | 10 | Mar. |
| 20400 | 26 | 19 | 24 | Mar. |

Before the Calendar was corrected, since all the centuries of years were bissextile, the progression of the new moons was perpetually 4 days, 8 hours, 13 minutes, 30 seconds, as the following little table shows.

[Margin: How great the progression of the new moons is from one century to another before the correction.]

Table (printed p. 529). New-moon progression, 200–600 (before correction).

| Anni | D. | H. | M. | Men. |
|------|----|----|----|------|
| 200 | 2 | 14 | 54 | Mar. |
| 300 | 6 | 23 | 7 | Mar. |
| 400 | 11 | 7 | 21 | Mar. |
| 500 | 15 | 15 | 34 | Mar. |
| 600 | 19 | 23 | 48 | Mar. |

Table (printed p. 529). New-moon progression, 600–1000 (before correction).

| Anni | D. | H. | M. | Men. |
|------|----|----|----|------|
| 600 | 19 | 23 | 48 | Mar. |
| 700 | 24 | 8 | 1 | Mar. |
| 800 | 28 | 16 | 15 | Mar. |

| Anni | D. | H. | M. | Men. |
|------|----|----|----|------|
| 900 | 2 | 0 | 28 | Apr. |
| 1000 | 6 | 8 | 42 | Apr. |

Since these things are so, and the reckoning of our own calculation is found in approved authors, I really do wonder from where Vieta drew that progression of his, different from ours. And indeed it cannot be that the progression from a bissextile century to a non-bissextile century should be the same as that from a non-bissextile century to a non-bissextile century, as Vieta will have it — since in the two cases the ratio is not the same, as is evident. I wished to examine these two propositions — although they contribute little to our purpose — so that the studious reader may see that Vieta relies on a less certain reckoning than we do, one that I can find in no approved writer. Indeed, if the new moons of those centuries which I have adduced from Vieta are correctly computed, whether by chapter 13 or by the two following chapters, exactly the same progression that I have mentioned will be detected, as appears in the table set below, in which the new moons have been computed by the following chapter.

Table (printed p. 529, at left). New moons of the sample centuries computed by the following chapter. Columns: Anni | D. | H. | M.

| Anni | D. | H. | M. |
|------|----|----|----|
| 3200 | 7 | 5 | 59 |
| 3300 | 13 | 14 | 12 |
| 3400 | 18 | 22 | 26 |
| 3500 | 24 | 6 | 39 |
| 3600 | 27 | 14 | 53 |

Furthermore, reason too persuades us that the progression of the new moons ought to be the one I have stated, and the one the calculation indicates — not the one Vieta prescribes. For since, if all the centuries were bissextile, that progression would contain 4 days, 8 hours, 13 minutes, 30 seconds — as we saw in the centuries before the correction — it necessarily follows that from a bissextile century to a non-bissextile one the progression is 6 days and so on, not 5. For because the later century is not bissextile, the new moon will not fall in it one day earlier, as in bissextile years; therefore the progression ought already to be one of 5 days. But since in that century one day is added to the new moon — the day, namely, that was then removed, as we said in chapter 13 — that new moon will fall still later by one day, and so the progression will be 6 days and so

on. The calculation itself proves this best. For if the new moon, say, in the year 1700 is computed as though for a bissextile year, it will be found to fall on the 18th of March, at 16 hours 48 minutes — that is, two days earlier than if that century were not bissextile: since we have found that new moon to fall on the 20th and so on. Hence the new moons will advance from a bissextile century to a non-bissextile one not by 4 days only, but by two more. But from a non-bissextile century to a non-bissextile one this progression will embrace only 5 days, 8 hours, and so on, because the earlier century has its new moon one day later than if it were bissextile. Finally, the same progression from a non-bissextile century to a bissextile one: that progression would contain 4 days and so on; but since the [later century] is posited as non-bissextile, it will have its new moon one day later, and accordingly only 3 days, 8 hours, 13 minutes will be left for that progression. But if Vieta is unwilling to rest content with this progression, let him bring forward, if he can, another and surer calculation. Certainly the calculation of the lunations set up by him plainly confirms the progression we have expounded: since the same new moons and oppositions are found by his calculation as are found by the calculation of chapter 13 and of the following chapter. And this will be manifest from chapter 25, where we shall set out that calculation.

From these things, then, which we have briefly argued against Vieta's Calendar, I believe it plainly established that his is thoroughly faulty, while ours — which truly deserves to be called the perpetual Gregorian (although he, out of contempt, as I said, calls it "common") — is more in keeping with the Decrees and sanctions of the Fathers and the Councils.

And I should wish all these things to be received by Vieta, a prudent and learned man, in the same spirit in which they were said by me. For I wish nothing (as I even professed at the outset) to be detracted from his reputation — a man whose reputation I have always looked up to, whose labors I have always admired. I have only tried to show that the Gregorian Calendar, which I have expounded throughout this whole volume, does not contain so many errors as Vieta, without any reason, imputes to it; and that hardly any more perfect one can be constructed — so that there is no need to devise or fabricate another beginning of the year, and much less to arrange the epacts in the Calendar on some other plan, since they have been arranged on the best plan in the Gregorian Calendar.

CHAPTER 25.

ON ANOTHER METHOD OF COMPUTING THE MEAN NEW MOONS AND FULL MOONS OF EASTER AFTER THE CORRECTION OF THE YEAR.

I have said that Vieta, in the book of his Calendar, has written many things excellently and subtly, among which he devised an elegant method of computing the mean conjunctions and oppositions of the Luminaries at Easter after the correction — a method I have decided to expound here by way of appendix, because in it there is no need for the removed days to be added, as in the earlier calculation (which is indeed troublesome when those days have grown into a larger sum). But since he himself accommodates this method only to the centennial years after the correction, we shall extend it to the non-centennial years as well — so that from this too Vieta may understand that I have wished to detract nothing here from his reputation, but only had it in mind to refute what he has less rightly delivered concerning the whole business of the Calendar, while what he has taught rightly and soundly, I gladly embrace. His table, however, needs correction on account of the seconds, thirds, and fourths neglected by him, which over a great number of years can produce no slight error — so that it is no wonder that he found the Easter new moons of the years 19480000 and 165580200, from his table, to answer to the equation of his epacts, which nevertheless is not true, as we have shown above.

The method, then, is as follows. First let the Easter new moons of these four years — 1600, 1700, 1800, and 1900 — be set out as the roots of all the new moons to be computed. These I computed most carefully from the tables of chapter 13, and I found that in the hours they differ not a little from those set out by Vieta. Next let a table of years be constructed which advance by 400s, up to 4000; thence by 2000s up to 10000; then from 10000 by 10000s up to 100000; thence by 100000s up to 1000000; and from 1000000 by 1000000s up to 10000000; and so on. To these must be joined the epacts set out at the end of chapter 13, corrected, however, on account of the removed days, in this way. Since 400 years take away three days, three days must be subtracted from the epact of year 400, which is D.12, 3 hours, 50 minutes, 2 seconds, 36 thirds, 40 fourths; and so, alongside the year 400, the epact D.9, 3 hours, 50 minutes, 3 seconds is to be placed. For in place of the 36 thirds we took 1 second, as has also been done in the others. By the same method, from the epact of year 800, 6 days are to be subtracted, and so on, always removing 3 days as many times as 400 years are included in the centennial in

question — a revolution of the new moons of so many days being first added to the epact, so that the subtraction can be made, until a number is left smaller than a lunar month. For this purpose the table of revolutions of the new moons set out in chapter 13, number 4, will be wonderfully serviceable. But you will far more easily correct the epacts to be assigned to all the centennial years in this way. Alongside the year 800 let the corrected epact of year 400 be written, doubled; alongside 1200, tripled; alongside 1600, quadrupled; and so on, always casting away the lunar month whenever

[Margin: The construction of the tables for computing the mean new moons after the correction.]

so that it can be cast out, leaving the epact [epacta] smaller than a lunar month [mensis Lunaris]. When, however, you reach the year 4000, join together the epacts of the years 2000 and 4000 to produce the epact of the year 6000. Likewise, double the epact of the year 4000 to compose the epact of the year 8000. Finally, join the epacts of the years 4000 and 6000 to obtain the epact of the year 10000. Double this, quadruple it, and so on, for the years 20000, 30000, 40000, and the rest. Again, double, triple, and so on the epact of the year 100000 for the years 200000, 300000, and so forth — and thus on to infinity. But here is the table.

Roots of the New Moons [Radices Nouiluniorum].

(In these tables *D* = days, *H* = hours, *M* = minutes/scruples, *S* = seconds; "Men." = month.)

| Indices radicum | Anni Dñi | D | H | M | S | Men. |
|-----------------|----------|----|----|----|----|------|
| 0 | 1600 | 14 | 8 | 34 | 54 | Mar. |
| 1 | 1700 | 20 | 16 | 48 | 24 | Mar. |
| 2 | 1800 | 26 | 1 | 1 | 55 | Mar. |
| 3 | 1900 | 31 | 9 | 15 | 25 | Mar. |

Corrected epacts for finding the new moons and the full moons [Epactæ correctæ pro Nouilunijs, Plenilunijsque indagandis].

| Anni | D | H | M | S |
|------|----|----|----|---|
| 400 | 9 | 3 | 50 | 3 |
| 800 | 18 | 7 | 40 | 5 |
| 1200 | 27 | 11 | 30 | 8 |
| 1600 | 7 | 2 | 36 | 7 |

| Anni | D | H | M | S |
|---------|----|----|----|----|
| 2000 | 16 | 6 | 26 | 10 |
| 2400 | 25 | 10 | 16 | 11 |
| 2800 | 5 | 1 | 22 | 11 |
| 3200 | 14 | 5 | 12 | 14 |
| 3600 | 23 | 9 | 2 | 16 |
| 4000 | 3 | 0 | 8 | 16 |
| 6000 | 19 | 6 | 34 | 25 |
| 8000 | 6 | 0 | 16 | 32 |
| 10000 | 22 | 6 | 42 | 42 |
| 20000 | 15 | 0 | 41 | 21 |
| 30000 | 7 | 18 | 40 | 0 |
| 40000 | 0 | 12 | 38 | 39 |
| 50000 | 22 | 19 | 21 | 21 |
| 60000 | 15 | 13 | 19 | 59 |
| 70000 | 8 | 7 | 18 | 38 |
| 80000 | 1 | 1 | 17 | 17 |
| 90000 | 23 | 7 | 59 | 59 |
| 100000 | 16 | 1 | 58 | 38 |
| 200000 | 2 | 15 | 13 | 13 |
| 300000 | 18 | 17 | 11 | 51 |
| 400000 | 5 | 6 | 26 | 25 |
| 500000 | 21 | 8 | 25 | 3 |
| 600000 | 7 | 21 | 39 | 38 |
| 700000 | 23 | 23 | 38 | 16 |
| 800000 | 10 | 12 | 52 | 51 |
| 900000 | 26 | 14 | 51 | 29 |
| 1000000 | 13 | 4 | 6 | 3 |
| 2000000 | 26 | 8 | 12 | 7 |
| 3000000 | 9 | 23 | 34 | 7 |
| 4000000 | 23 | 3 | 40 | 10 |
| 5000000 | 6 | 19 | 2 | 10 |

| Anni | D | H | M | S |
|------------|----|----|----|----|
| 6000000 | 19 | 23 | 8 | 13 |
| 7000000 | 3 | 14 | 30 | 13 |
| 8000000 | 16 | 18 | 36 | 17 |
| 9000000 | 0 | 9 | 58 | 17 |
| 10000000 | 13 | 14 | 4 | 20 |
| 20000000 | 27 | 4 | 8 | 40 |
| 30000000 | 11 | 5 | 28 | 57 |
| 40000000 | 24 | 19 | 33 | 17 |
| 50000000 | 8 | 20 | 53 | 34 |
| 60000000 | 22 | 10 | 57 | 54 |
| 70000000 | 6 | 12 | 18 | 11 |
| 80000000 | 20 | 2 | 22 | 31 |
| 90000000 | 4 | 3 | 42 | 48 |
| 100000000 | 17 | 17 | 47 | 8 |
| 200000000 | 5 | 22 | 50 | 13 |
| 300000000 | 23 | 16 | 37 | 20 |
| 400000000 | 11 | 21 | 40 | 25 |
| 500000000 | 0 | 2 | 43 | 30 |
| 600000000 | 17 | 20 | 30 | 38 |
| 700000000 | 6 | 1 | 33 | 42 |
| 800000000 | 23 | 19 | 20 | 50 |
| 900000000 | 12 | 0 | 23 | 55 |
| 1000000000 | 0 | 5 | 26 | 59 |
| 2000000000 | 0 | 10 | 53 | 59 |
| 3000000000 | 0 | 16 | 20 | 58 |
| 4000000000 | 0 | 21 | 47 | 58 |
| 5000000000 | 1 | 3 | 14 | 57 |
| 6000000000 | 1 | 8 | 41 | 57 |
| 7000000000 | 1 | 14 | 8 | 56 |
| 8000000000 | 1 | 19 | 35 | 56 |
| 9000000000 | 2 | 1 | 2 | 55 |

| Anni | D | H | M | S |
|-------------|----|----|----|----|
| 10000000000 | 2 | 6 | 29 | 55 |
| 20000000000 | 4 | 12 | 59 | 50 |
| 30000000000 | 6 | 19 | 29 | 45 |
| 40000000000 | 9 | 1 | 59 | 40 |
| 50000000000 | 11 | 8 | 29 | 35 |
| 60000000000 | 13 | 14 | 59 | 30 |

2. To compute, then, the new moon [novilunium] of any centennial year after the correction of the proposed [year], one must first choose the root [radix] from those four given above. This is done by dividing the number of hundreds by 4. For if nothing is left over in the division, the root of the year 1600 is to be adopted, prefixed with index 0. But if 1 is left over, the root of the year 1700, to which index 1 is assigned; if 2, the root of the year 1800, of index 2; and if finally 3, the root of the year 1900, of index 3. This choice of root is made without any trouble, even from memory, if one merely attends to the number expressed by its thousands and hundreds.

[Margin: The method by which the new moon of any centennial year after the correction is computed.]

For when all the 20s have been cast out of that number, if nothing is left over, the root of index 0 is to be taken; but if something remains, all the 4s are then to be cast out — and if indeed there is no remainder, the same root of index 0 is to be adopted; but if 1 is left over, the root of index 1; if 2, the root of index 2; and if finally 3, the root of index 3.

Once the root has been chosen, its centennial year is to be subtracted from the proposed centennial year, and with the remainder one must enter the table of corrected epacts as many times as needed, extracting the epacts owed for the numbers by which the entry is made. When these have been collected into a single sum — and the lunar month cast out, as often as it can be — the sum, or the remaining number, is to be subtracted from the new moon of the chosen root, a whole lunar month having first been added on if the subtraction cannot otherwise be made. The remaining number will then indicate the new moon of March, which is sought. The same result is reached, when the subtraction cannot be made, if the sum or the remaining number is first subtracted from the synodic month [mensis synodicus], and the new moon of the root is added to that

remainder; for the number so composed will be the new moon [Neomenia] we are looking for.

But so as not to be forced to work twice over — by adding, that is, and then subtracting — we have drawn up the following table, which contains the roots of the new moons together with a whole lunar month. For in this way, whenever the number to be subtracted is greater than the number of the chosen root, the subtraction is to be made from the number of that same root in this table; and the remaining number will indicate the new moon of March that is sought.

[Margin: This table is to be used in place of the root above whenever the sum of the epacts cannot be subtracted from the new moon of that [other] table.]

Roots of the New Moons with a whole lunar month added [Radices Nouiluniorum ad mensem Lunarem additorum].

| Indices radicum | Anni | D | H | M | S | Men. |
|-----------------|------|----|----|----|----|------|
| 0 | 1600 | 43 | 21 | 18 | 57 | Mar. |
| 1 | 1700 | 50 | 5 | 32 | 27 | Mar. |
| 2 | 1800 | 55 | 13 | 45 | 58 | Mar. |
| 3 | 1900 | 60 | 21 | 59 | 28 | Mar. |

When, moreover, the sum collected from the epacts is greater than a lunar month, yet smaller than the number of the chosen root of this table, it is to be subtracted, without first casting out the synodic month from it.

For example, suppose the paschal new moon of the year 4000 is sought. The number expressed by thousands and hundreds is 40. When all the 20s are cast out, nothing is left over; therefore the root of index 0 is to be chosen. Its centennial, 1600, subtracted from the proposed centennial 4000, leaves 2400, which number has, in the table of corrected epacts, the epact D. 25, H. 10, Min. 16, Sec. 11. Since this cannot be subtracted from the new moon of the chosen root, it is to be subtracted from the number of that same root, together with a lunar month, in the next table — that is, from D. 43, Hor. 21, Min. 18, Sec. 57. The remaining number will indeed indicate the new moon in March, D. 18, H. 11, Min. 2, Sec. 46, which is paschal.

Likewise, if the paschal new moon of the year 4800 is sought. The number expressed by thousands and hundreds is 48. When all the 20s are rejected, 8 remain; and when all the 4s are cast out, nothing remains. Therefore the root of index 0 is to be taken. Its centennial 1600, subtracted from the given centennial

4800, leaves 3200; entering the table just once with this number, one extracts the epact D. 14, H. 5, Min. 12, Sec. 14. For if this is removed from the new moon of the chosen root — namely of the year 1600 — the remaining new moon [Neomenia] becomes D. 0, H. 3, Min. 22, Sec. 40 in March, which is not paschal. When therefore the lunar month D. 29 [H. 12, Min. 44, Sec. 3] is added, you find the paschal new moon in March, D. 29, H. 16, Min. 6, Sec. 43.

Again, suppose the given year is 109500. The number is expressed by thousands and hundreds as 95. Casting out 20, there remain 15; and taking away [three times] 4 there remain 3. Therefore the root of index 3 is to be chosen. Its centennial 1900, subtracted from the given centennial 109500, leaves 107600. One must therefore enter the table with the years 100000, 6000, 1600, and the sum of the epacts D. 42, H. 11, Min. 9, Sec. 10 is collected. If the lunar month is taken from this, there remain D. 12, H. 22, Min. 25, Sec. 7; and when these are removed from the new moon of the root found — namely of the year 1900 — the paschal new moon [Neomenia] is found in March, D. 18, H. 10, Min. 50, Sec. 18.

Working for the year 109500:

| | D | H | M | S |
|---------------------------------------|----|----|----|----|
| 100000 | 16 | 1 | 58 | 38 |
| 6000 | 19 | 6 | 34 | 25 |
| 1600 | 7 | 2 | 36 | 7 |
| Summa (sum) | 42 | 11 | 9 | 10 |
| mens. detr. (month subtracted) | 29 | 12 | 44 | 3 |
| residuum (remainder) | 12 | 22 | 25 | 7 |
| Nouil. rad. (new moon of root) | 31 | 9 | 15 | 25 |
| residuum detr. (remainder subtracted) | 12 | 22 | 25 | 7 |
| Nouil. Mar. (new moon of March) | 18 | 10 | 50 | 18 |

Finally, suppose the year 165580200 is given. The number expressed by thousands and hundreds is 02. Casting out all the 20s and 4s, 2 are left over; and therefore the root of index 2 is to be chosen — namely of the year 1800. When the centennial of this root is removed from the given year, the remaining year becomes 165578400. So if you enter the table with the years placed here, extracting the epacts, you will collect the sum D. 91, H. 19, Min. 37, Sec. 28. From this, subtracting the greatest revolution of the new moons that can be subtracted — namely D. 88, H. 14, Min. 12, Sec. 10 — there will remain D. 3, H. 5, Min. 25, Sec. 18; and this, taken away from the new moon of root 2, that is, of the year 1800,

leaves the paschal new moon [Neomenia] in March, D. 22, H. 19, Min. 36, Sec. 37. From which it appears that Viète's epact [Epacta Vietæ] of 2 or 4 — for on this point, as I said above, he is not consistent with himself — does not yield a new moon agreeing with the astronomical calculation, as we said before. And yet this whole calculation of Viète's is built entirely out of the calculation we set out in chapter 13, since from the epacts of the collected years it merely removes the days omitted on account of the equinox, as we have taught.

Working for the year 165580200:

| | D | H | M | S |
|--|----|----|----|----|
| 100000000 | 17 | 17 | 47 | 8 |
| 60000000 | 22 | 10 | 57 | 54 |
| 5000000 | 6 | 19 | 2 | 10 |
| 500000 | 21 | 8 | 25 | 3 |
| 70000 | 8 | 7 | 18 | 38 |
| 8000 | 6 | 0 | 16 | 32 |
| 400 | 9 | 3 | 50 | 3 |
| Summa (sum) | 91 | 19 | 37 | 28 |
| Reu. No. det. (revolution of new moons subtracted) | 88 | 14 | 12 | 10 |
| Residuum (remainder) | 3 | 5 | 25 | 18 |
| Nouil. Rad. (new moon of root) | 26 | 1 | 1 | 55 |
| Resid. detra. (remainder subtracted) | 3 | 5 | 25 | 18 |
| Nouil. Mart. (new moon of March) | 22 | 19 | 36 | 37 |

Now, if instead of the four roots of the new moons above we assume the four roots of the full moons [Pleniluniorum radices] of the same years, we shall in the same way compute the paschal mean oppositions [oppositiones mediae Paschales]. And thus the roots of the full moons stand, computed for the same years 1600, 1700, 1800, 1900.

Suppose the paschal full moon [Plenilunium] of the year 4800 is to be investigated. The epact owed to it is D. 14, H. 5, Min. 12, Sec. 14, as was shown. If this is taken away from the full moon of the year 1600 — since the root of index 0 is to be used, as we said — you will find the full moon of March to fall on D. 14, H. 21, Min. 44, Sec. 42, which is not paschal. Therefore, when a lunar month is added, the paschal full moon comes to fall in April, D. 13, H. 10, Min. 28, Sec. 45.

Again, for the year 109500, the root of index 3 agrees, and the sum of the epacts (after casting out the lunar month) is D. 12, h. 22, M. 25, Sec. 7. When this is taken away from the full moon of the year 1900, the paschal full moon will fall on April's day 2, h. 5, Min. 12, Sec. 20.

Furthermore, for the year 165580200, the root of index 2 is owed, and the sum of the epacts (after casting out the lunar months) is D. 3, h. 5, m. 25, Sec. 18. When this is deducted from the full moon of the year 1800, the paschal full moon will fall on April's day 6, h. 13, min. 58, Sec. 39.

Finally, suppose the year 3700 is given. The root of index 1 will be found; its year 1700, subtracted from the proposed year, leaves 2000, to which the epact D. 16, h. 6, m. 26, sec. 10 corresponds in the table. This cannot be subtracted from the April full moon of the year 1700 — namely from D. 4, h. 11, m. 10, sec. 26. If therefore the 31 days of March are added, or a lunar month is added and the subtraction is made, you will find the full moon in April, D. 17, h. 17, min. 28, sec. 19. And so with the rest. Remember, however, that if the full moon found in March is not paschal, you should add a lunar month; but if the one in April is not paschal, you should subtract a lunar month, and the full moon will fall in March — which is what is sought — the 31 days of March having first been added if need be. The full moon then falls in March when the subtraction is made from the days of March even after the addition of the lunar month; yet in such a way that, if the remaining number is greater than 31, you take away 31 so as to have the full moon in April. Thus if you should find the full moon on the 43rd of March, it would fall on the 12th of April. But the full moon falls in April when the subtraction is made from the days of April, even after the addition of the lunar month. For example, in the proposed case: if to the April full moon of the year 1700 you add the 31 days of March, you will have the full moon of March on day 35, h. 11, min. 10, sec. 26; and if from this you subtract the epact D. 16, h. 6, min. 26, sec. 10, you will find the full moon in March on day 19, h. 4, Min. 44, sec. 16, which is not paschal. If, therefore, a lunar month is added, it will be found to fall in March on day 48, h. 17, Min. 28, Sec. 19 — that is, in April on day 17, H. 17, Min. 28, Sec. 19. But on the other hand, if to that same April full moon of the year 1700 you add a lunar month, you will make up April's day 33, H. 23, Min. 54, Sec. 29; and if you subtract the same epact D. 16, H. 6, Min. 26, Sec. 10, you will have the same paschal full moon in April, D. 17, H. 17, Min. 28, Sec. 19.

[Margin: The method by which the full moon of any centennial year after the correction is computed.]

Here too we have appended a table of the roots of the full moons together with a whole lunar month, so that whenever the number to be subtracted is greater than the number of the chosen root, the subtraction may be made from the number of that same root in this table. For example: in the recent year 3700, the epact D. 16, H. 6, M. 26, Sec. 10 cannot be subtracted from the full moon of the chosen root — namely of the year 1700. If, therefore, it is taken from the number of that same root of index 1 in this table — that is, from D. 33, H. 23, M. 54, Sec. 29 — the remainder becomes the full moon in April, D. 17, H. 17, Min. 28, Sec. 19, as before.

Roots of the Full Moons [Radices Pleniluniorum].

| Indices radicum | Anni | D | H | M | S | (month) |
|-----------------|------|----|----|----|----|---------|
| 0 | 1600 | 29 | 2 | 56 | 56 | Mar. |
| 1 | 1700 | 4 | 11 | 10 | 26 | Apr. |
| 2 | 1800 | 9 | 19 | 23 | 56 | Apr. |
| 3 | 1900 | 15 | 3 | 37 | 26 | Apr. |

[Margin: When the full moon falls in March, or in April.]

And so here too, when the sum collected from the epacts is indeed greater than a lunar month, but smaller than the number of the chosen root in this table, it is to be subtracted without first casting out the lunar month from that same [root].

Nor should this be passed over: whenever it is established that the sum of the epacts, subtracted from the new moon or full moon of the chosen root, leaves a new moon or full moon in March that is not paschal — or that, when subtracted, it has left a non-paschal new moon or full moon of March — that same sum ought to be subtracted from the number in the table of the new moons, or of the full moons, with the [month] added. For in this way the paschal new moon, or full moon, will remain. For example, in the earlier case of the year 4800, it is certain that the epact D. 14, h. 5, M. 12, Sec. 14, subtracted from the new moon of the root of the year 1600 — that is, from D. 14, H. 8, M. 34, Sec. 54 — leaves a non-paschal new moon, which remains at D. 0, H. 3, M. 22, Sec. 40 of March. Therefore, if that same epact is subtracted from the number of the same root in the later table of the new moons — that is, from D. 43, H. 21, Min. 18, Sec. 57 — the paschal new moon will be left in March, D. 29, H. 16, Min. 6, Sec. 43, which was also found above.

[Margin: Once the new moon or full moon of some centennial year after the correction has been found, in what way the new moon or full moon of any year after that centennial is derived from it.]

Roots of the Full Moons with a lunar month added [Radices Pleniluniorum ad mensem Lunarem additorum].

| Indices radicum | Anni | D | H | M | S | (month) |
|-----------------|------|----|----|-----|----|---------|
| 0 | 1600 | 58 | 15 | 40 | 59 | Mar. |
| 1 | 1700 | 33 | 23 | 54 | 29 | Apr. |
| 2 | 1800 | 39 | 8 | [?] | 59 | Apr. |
| 3 | 1900 | 44 | 16 | 21 | 30 | Apr. |

[Margin: This table is to be used in place of the root above whenever the sum of the epacts cannot be subtracted from the full moon of the table above.]

3. Now, if anyone wishes [to find] the paschal new moon of any expanded year [annus expansus] after a given centennial, the epact of that expanded year, set out in the first table described on p. 13 (which we thought worth repeating here for greater convenience), is to be subtracted from the new moon or full moon of that centennial, a whole lunar month having first been added if the subtraction cannot be made — yet in such a way that, if the centennial is not a leap year (which you will know if, after casting out 20 and 4 from the number expressed by thousands and hundreds, something is left over), you cast one further unit away from the remainder. For in this way the new moon of that expanded year becomes known.

Let it be sought, for example, the paschal new moon or full moon of the year 1673. The epact of the year 73 is D. 26, H. 9, M. 44, S. 14, which, subtracted from the new moon of the centennial 1600 (a lunar month having first been added), leaves the paschal new moon in March, D. 17, H. 11, M. 34, Sec. 43. Let it again be required to find the paschal new moon of the year 29447. Since the thousands and hundreds give the number 94, and when 20 and 4 are cast out there remain 2, the centennial is therefore not a leap year, and the root of index 2 is to be chosen; its centennial 1800, subtracted from the given centennial 29400, leaves 27600. Hence the paschal new moon [Neomenia] of the year 29400 falls in March, D. 4, h. 13, M. 54, Sec. 5. If from this you take away the epact of the year 47, there will remain D. 5, H. 10, M. 28, Sec. 51. When a unit is further removed — because the centennial is not a leap year — the remaining new moon [Neomenia] falls in March, D. 4, h. 10, M. 28, Sec. 51, which is not paschal. Therefore, adding a synodic

month, you will find the paschal new moon in March, D. 33, h. 23, M. 22, Sec. 54 — that is, in April, D. 2, Hor. 23, Min. 12, Sec. 54.

Working for the year 1673:

| | D | H | M | S |
|----------------------------------|----|----|----|----|
| Nouil. 1600. (new moon of 1600) | 14 | 8 | 34 | 54 |
| Mensis Lun. (lunar month) | 29 | 12 | 44 | 3 |
| Summa (sum) | 43 | 21 | 18 | 57 |
| Epa. anni 73. (epact of year 73) | 26 | 9 | 44 | 14 |
| Nouil. 1673 (new moon of 1673) | 17 | 11 | 34 | 43 |

[Caput XXV, continued — De alia ratione supputandi novilunia]

Worked computation (new-moon working, continued from the preceding leaf)

This table stands at the head of the leaf; the paschal full-moon examples that follow flow around it. It carries a worked new-moon (novilunium) computation — roots taken by index, a synodic month cast out, then the epact of year 47 applied. Transcribed as printed.

| | D. | H. | M. | S. |
|--------------|----|----|----|----|
| 20000 | 15 | 0 | 41 | 21 |
| 6000 | 19 | 6 | 34 | 25 |
| 1600 | 7 | 2 | 36 | 7 |
| Summa | 41 | 9 | 51 | 53 |
| Mensis detr. | 29 | 12 | 44 | 3 |
| Residuum | 11 | 21 | 7 | 50 |
| Nouil. rad. | 26 | 1 | 1 | 55 |
| Resid. detr. | 11 | 21 | 7 | 50 |
| Nouil. Mar. | 14 | 3 | 54 | 5 |
| Ep. anni 47. | 8 | 17 | 25 | 14 |
| Residuum | 5 | 10 | 28 | 51 |
| Nouil. Mar. | 4 | 10 | 28 | 51 |
| Mens. addit. | 29 | 12 | 44 | 3 |

| | D. | H. | M. | S. |
|-------------|----|----|----|----|
| Summa | 33 | 23 | 12 | 54 |
| Nouil. Apr. | 2 | 23 | 12 | 54 |

(Row label "Mensis detr." = "a month subtracted"; "Nouil. rad." = "root new moon"; "Resid. detr." = "the residuum subtracted"; "Mens. addit." = "a month added"; "Nouil. Mar."/"Nouil. Apr." = new moon of March / of April.)

[Paschal full-moon examples]

Likewise, suppose the paschal full moon of the year 1673 is to be sought. The epact of year 73 is D.26.h.9.Min.44.Sec.14; subtracted from the full moon of the centesimal year 1600, it leaves the full moon of March at D.2.h.17.m.12.Sec.42, which is not the paschal one. Adding a lunar month, therefore, the paschal full moon falls in April at D.1.H.5.Min.56.Sec.45.

Furthermore, suppose the full moon of the year 29447 is to be explored. Since in the centesimal year 29400 the full moon falls in March at D.28.H.22.Min.16.Sec.7, then, if from it the epact of year 47 — which is D.8.H.17.Min.25.Sec.14 — is taken away, and one day is cast out besides (because this centesimal year is not a leap year), the full moon of the proposed year remains in March at D.19.H.4.M.50.Sec.53, which is not the paschal one. Adding a lunar month, then, the paschal full moon is detected in April at D.17.H.17.Min.34.Sec.56.

Finally, let the paschal full moon of the year 4018 be set out for investigation. Since the root 0 belongs to this year, and its centesimal 1600, taken from it, leaves 2400, to which belongs the epact D.25.h.10.Min.16.Sec.11 — and this, subtracted from the full moon of the year 1600, leaves the full moon of March at D.3.h.16.min.40.Sec.45, which is not the paschal one. Adding a lunar month, therefore, the paschal full moon falls in April at D.2.h.5.Min.24.Sec.48. From this the epact of the expanded year, 18, cannot be subtracted. If, then, a lunar month is added and the subtraction is made, the sought full moon of the year 4018 comes out at D.13.h.13.M.8.Sec.36 in April. Here it is easily clear that the epact of year 2400, subtracted from the full moon of year 1600, leaves a full moon in March that is not paschal. Therefore, if the same epact D.25.h.10.m.16.Sec.11 is taken from the augmented full moon of the latter little table — namely from D.58.h.15.m.40.Sec.59 — we shall find the paschal full moon falling in April at D.2.h.5.m.24.sec.48, as before.

[Margin: When the complements of the epacts are to be used in place of the epacts themselves.] Since, however, it not rarely happens that the epact of an expanded year cannot be subtracted from the new moon or full moon of the preceding centesimal year, we have here attached to the table of epacts (which we have transferred here from chapter 13 for greater convenience) another table, which contains the complements of those same epacts up to a whole lunar month. That is, when the epact cannot be subtracted, its complement is added to the new moon or full moon of the centesimal year — yet in such a way that, if the centesimal year is a common year, one day is subtracted from the number so formed. The same new moon or full moon is nonetheless produced if the epact is subtracted from the new moon or full moon of the preceding centesimal year once a lunar month has first been added, and so forth.

For example: in the recent year 4018 the full moon of the centesimal year was found in April at D.2.H.5.M.24.Sec.48, from which the epact of the expanded year, 18, cannot be taken. If, then, we add the complement of that epact, D.11.H.7.Min.43.Sec.48, we shall find the full moon of the year 4018 in April at D.13.H.13.Min.8.Sec.36, as above.

Table of Epacts for 100 expanded years [Tabula Epactarum in 100. annis expansis]

Rows 1–81 are printed at the foot of this leaf (p. 534) in three panels; rows 82–100 are printed at the head of the following leaf (p. 535). Presented here as one continuous table.

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 1 | 10 | 15 | 11 | 22 |
| 2 | 21 | 6 | 22 | 44 |
| 3 | 2 | 8 | 50 | 2 |
| 4 | 14 | 0 | 1 | 24 |
| 5 | 24 | 15 | 12 | 46 |
| 6 | 5 | 17 | 40 | 5 |
| 7 | 16 | 8 | 51 | 27 |
| 8 | 28 | 0 | 2 | 49 |
| 9 | 9 | 2 | 30 | 7 |
| 10 | 19 | 17 | 41 | 29 |
| 11 | 0 | 20 | 8 | 48 |

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 12 | 12 | 11 | 20 | 10 |
| 13 | 23 | 2 | 31 | 32 |
| 14 | 4 | 4 | 58 | 50 |
| 15 | 14 | 20 | 10 | 12 |
| 16 | 26 | 11 | 21 | 34 |
| 17 | 7 | 13 | 48 | 53 |
| 18 | 18 | 5 | 0 | 15 |
| 19 | 28 | 20 | 11 | 37 |
| 20 | 10 | 22 | 38 | 55 |
| 21 | 21 | 13 | 50 | 17 |
| 22 | 2 | 16 | 17 | 36 |
| 23 | 13 | 7 | 28 | 58 |
| 24 | 24 | 22 | 40 | 20 |
| 25 | 6 | 1 | 7 | 38 |
| 26 | 16 | 16 | 19 | 0 |
| 27 | 27 | 7 | 30 | 22 |
| 28 | 9 | 9 | 57 | 41 |
| 29 | 20 | 1 | 9 | 3 |
| 30 | 1 | 3 | 36 | 21 |
| 31 | 11 | 18 | 47 | 43 |
| 32 | 23 | 9 | 59 | 5 |
| 33 | 4 | 12 | 26 | 24 |
| 34 | 15 | 3 | 37 | 46 |
| 35 | 25 | 18 | 49 | 7 |
| 36 | 7 | 21 | 16 | 26 |
| 37 | 18 | 12 | 27 | 48 |
| 38 | 29 | 3 | 39 | 10 |
| 39 | 10 | 6 | 6 | 29 |
| 40 | 21 | 21 | 17 | 51 |
| 41 | 2 | 23 | 45 | 9 |
| 42 | 13 | 14 | 56 | 31 |

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 43 | 24 | 6 | 7 | 53 |
| 44 | 6 | 8 | 35 | 12 |
| 45 | 16 | 23 | 46 | 33 |
| 46 | 27 | 14 | 57 | 55 |
| 47 | 8 | 17 | 25 | 14 |
| 48 | 20 | 8 | 36 | 36 |
| 49 | 1 | 11 | 3 | 55 |
| 50 | 12 | 2 | 15 | 16 |
| 51 | 22 | 17 | 26 | 38 |
| 52 | 4 | 19 | 53 | 57 |
| 53 | 15 | 11 | 5 | 19 |
| 54 | 26 | 2 | 16 | 41 |
| 55 | 7 | 4 | 43 | 59 |
| 56 | 18 | 19 | 55 | 21 |
| 57 | 29 | 11 | 6 | 43 |
| 58 | 10 | 13 | 34 | 2 |
| 59 | 21 | 4 | 45 | 24 |
| 60 | 3 | 7 | 12 | 42 |
| 61 | 13 | 22 | 24 | 4 |
| 62 | 24 | 13 | 35 | 26 |
| 63 | 5 | 16 | 2 | 45 |
| 64 | 17 | 7 | 14 | 7 |
| 65 | 27 | 22 | 25 | 29 |
| 66 | 9 | 0 | 52 | 47 |
| 67 | 19 | 16 | 4 | 9 |
| 68 | 1 | 18 | 31 | 28 |
| 69 | 12 | 9 | 42 | 50 |
| 70 | 23 | 0 | 54 | 12 |
| 71 | 4 | 3 | 21 | 30 |
| 72 | 15 | 18 | 32 | 52 |
| 73 | 26 | 9 | 44 | 14 |

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 74 | 7 | 12 | 11 | 33 |
| 75 | 18 | 3 | 22 | 55 |
| 76 | 0 | 5 | 50 | 13 |
| 77 | 10 | 21 | 1 | 35 |
| 78 | 21 | 12 | 12 | 57 |
| 79 | 2 | 14 | 40 | 16 |
| 80 | 14 | 5 | 51 | 38 |
| 81 | 24 | 21 | 3 | 0 |
| 82 | 5 | 23 | 30 | 18 |
| 83 | 16 | 14 | 41 | 40 |
| 84 | 28 | 5 | 53 | 2 |
| 85 | 9 | 8 | 20 | 21 |
| 86 | 19 | 23 | 31 | 43 |
| 87 | 1 | 1 | 59 | 1 |
| 88 | 12 | 17 | 10 | 23 |
| 89 | 23 | 8 | 21 | 45 |
| 90 | 4 | 10 | 49 | 4 |
| 91 | 15 | 2 | 0 | 26 |
| 92 | 26 | 17 | 11 | 47 |
| 93 | 7 | 19 | 39 | 6 |
| 94 | 18 | 10 | 50 | 28 |
| 95 | 29 | 2 | 1 | 50 |
| 96 | 11 | 4 | 29 | 9 |
| 97 | 21 | 19 | 40 | 30 |
| 98 | 2 | 22 | 7 | 49 |
| 99 | 13 | 13 | 19 | 11 |
| 100 | 25 | 4 | 30 | 33 |

Table of the complements of the Epacts for 100 expanded years [Tabula complementorum Epactarum in 100. annis expansis]

Printed on this leaf (p. 535) in three panels. Column heading verbatim:
"Complementa Epactarum" (the third panel abbreviates the heading "Complementa Epactarū").

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 1 | 18 | 21 | 32 | 41 |
| 2 | 8 | 6 | 21 | 19 |
| 3 | 27 | 3 | 54 | 1 |
| 4 | 15 | 12 | 42 | 39 |
| 5 | 4 | 21 | 31 | 17 |
| 6 | 23 | 19 | 3 | 58 |
| 7 | 13 | 3 | 52 | 36 |
| 8 | 1 | 12 | 41 | 15 |
| 9 | 20 | 10 | 13 | 56 |
| 10 | 9 | 19 | 2 | 34 |
| 11 | 28 | 16 | 35 | 15 |
| 12 | 17 | 1 | 23 | 53 |
| 13 | 6 | 10 | 12 | 32 |
| 14 | 25 | 7 | 45 | 13 |
| 15 | 14 | 16 | 33 | 51 |
| 16 | 3 | 1 | 22 | 29 |
| 17 | 21 | 22 | 55 | 10 |
| 18 | 11 | 7 | 43 | 49 |
| 19 | 0 | 16 | 32 | 27 |
| 20 | 18 | 14 | 5 | 8 |
| 21 | 7 | 22 | 53 | 46 |
| 22 | 26 | 20 | 26 | 27 |
| 23 | 16 | 5 | 15 | 6 |
| 24 | 4 | 14 | 3 | 44 |
| 25 | 23 | 11 | 36 | 25 |
| 26 | 12 | 20 | 25 | 3 |

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 27 | 1 | 5 | 13 | 41 |
| 28 | 20 | 2 | 46 | 23 |
| 29 | 9 | 11 | 35 | 1 |
| 30 | 28 | 9 | 7 | 42 |
| 31 | 17 | 17 | 56 | 20 |
| 32 | 6 | 2 | 44 | 58 |
| 33 | 25 | 0 | 17 | 40 |
| 34 | 14 | 9 | 6 | 18 |
| 35 | 3 | 17 | 54 | 56 |
| 36 | 21 | 15 | 27 | 37 |
| 37 | 11 | 0 | 16 | 15 |
| 38 | 0 | 9 | 4 | 53 |
| 39 | 19 | 6 | 37 | 35 |
| 40 | 7 | 15 | 26 | 13 |
| 41 | 26 | 12 | 58 | 54 |
| 42 | 15 | 21 | 47 | 32 |
| 43 | 5 | 6 | 36 | 10 |
| 44 | 23 | 4 | 8 | 52 |
| 45 | 12 | 12 | 57 | 30 |
| 46 | 1 | 21 | 46 | 8 |
| 47 | 20 | 19 | 18 | 49 |
| 48 | 9 | 4 | 7 | 27 |
| 49 | 28 | 1 | 40 | 9 |
| 50 | 17 | 10 | 28 | 47 |
| 51 | 6 | 19 | 17 | 25 |
| 52 | 24 | 16 | 50 | 6 |
| 53 | 14 | 1 | 38 | 44 |
| 54 | 3 | 10 | 27 | 22 |
| 55 | 22 | 8 | 0 | 4 |
| 56 | 10 | 16 | 48 | 42 |
| 57 | 0 | 1 | 37 | 20 |

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 58 | 18 | 23 | 10 | 1 |
| 59 | 8 | 7 | 58 | 39 |
| 60 | 26 | 5 | 31 | 21 |
| 61 | 15 | 14 | 19 | 59 |
| 62 | 4 | 23 | 8 | 37 |
| 63 | 23 | 20 | 41 | 18 |
| 64 | 12 | 5 | 29 | 56 |
| 65 | 1 | 14 | 18 | 35 |
| 66 | 20 | 11 | 51 | 16 |
| 67 | 9 | 20 | 39 | 54 |
| 68 | 27 | 18 | 12 | 35 |
| 69 | 17 | 3 | 1 | 13 |
| 70 | 6 | 11 | 49 | 51 |
| 71 | 25 | 9 | 22 | 33 |
| 72 | 13 | 18 | 11 | 11 |
| 73 | 3 | 2 | 59 | 49 |
| 74 | 22 | 0 | 32 | 30 |
| 75 | 11 | 9 | 21 | 9 |
| 76 | 29 | 6 | 53 | 50 |
| 77 | 18 | 15 | 42 | 28 |
| 78 | 8 | 0 | 31 | 6 |
| 79 | 26 | 22 | 3 | 47 |
| 80 | 15 | 6 | 52 | 26 |
| 81 | 4 | 15 | 41 | 4 |
| 82 | 23 | 13 | 13 | 45 |
| 83 | 12 | 22 | 2 | 23 |
| 84 | 1 | 6 | 51 | 1 |
| 85 | 20 | 4 | 23 | 43 |
| 86 | 9 | 13 | 12 | 21 |
| 87 | 28 | 10 | 45 | 2 |
| 88 | 16 | 19 | 33 | 40 |

| Anni exp. | D. | H. | M. | S. |
|-----------|----|----|----|----|
| 89 | 6 | 4 | 22 | 18 |
| 90 | 25 | 1 | 54 | 55 |
| 91 | 14 | 10 | 43 | 38 |
| 92 | 2 | 19 | 32 | 16 |
| 93 | 21 | 17 | 4 | 57 |
| 94 | 11 | 1 | 53 | 35 |
| 95 | 0 | 10 | 42 | 13 |
| 96 | 18 | 8 | 14 | 55 |
| 97 | 7 | 17 | 3 | 33 |
| 98 | 26 | 14 | 36 | 14 |
| 99 | 15 | 23 | 24 | 52 |
| 100 | 4 | 8 | 13 | 30 |

[Deriving the full moon from the new moon; deriving any month from March/April]

[Margin: Finding the full moon from the new moon. Finding the new moon or full moon of any month from the March or April new moon or full moon.]

4. Once the new moon has been found, everyone knows that if half of a lunar month — namely D.14.H.18 — is added, the mean full moon is produced.

If you wish to know the new moon or full moon of any other month from the new moon or full moon of March or April once found: if the given month is after March or April, add as many new-moon revolutions as there are complete months from March or April inclusive up to the proposed month exclusive; and from the sum throw out the days that those complete months contain. For the remaining number will give the new moon or full moon of the proposed

month sought. But if the given month is before March or April, then — reckoning from the new moon or full moon of March or April (a month of February and January, indeed even of March, being added first, if need be, so that the subtraction can be made) — you will throw out one lunation, or two, or three, and the new moon or full moon of February, or of January, or of March will be left.

Thus, since in the year 4800 the paschal new moon was found in March at D.29.H.16.Min.6.Sec.43: if the new moon of November of the same year is wanted,

we shall add the eighth revolution of new moons, namely D.236.H.5.Min.52.Sec.25 (because eight months have elapsed from March), and from the sum D.265.H.21.Min.59.Sec.8 we shall take away 245 days, elapsed from March to the end of October. For the remaining number will indicate the new moon in November at D.20.H.21.Min.59.Sec.8. Likewise, if the full moon in November is given, we shall again add the eighth revolution of new moons, that is D.236.H.5.Min.52.Sec.25, and from the sum D.251.Hor.3.Min.36.Sec.6 we shall subtract the same 245 days. For the remaining number will show us the full moon in November at D.6.H.3.Min.36.Sec.6. But if from the same new moon of March D.29.H.16.Min.6.Sec.43 you subtract two lunations, namely D.59.H.1.Min.28.Sec.6 (because if you subtracted only one, you would remain in March), a February of 29 days having first been added (since the year is a leap year), together with a January of 31 days, there will remain the new moon of January at D.30.H.14.Min.38.Sec.37. In February of that year, however, no new moon will occur; but its full moon will be found to happen at D.14.H.9.Min.0.Sec.38 — namely if, from the full moon of March D.14.H.21.Min.44.Sec.41, a February of 29 days having first been added, the lunar month D.29.H.12.Min.44.Sec.3 is subtracted.

[Margin: A shortcut for computing the full moons of the 100 expanded years.] If, finally, the paschal full moons must be computed for all 100 expanded years after any given centesimal year (which is necessary if one undertakes to examine the paschal full moons of the above table of movable feasts, chapter 22, or to extend them to further years), then — so that there is no need, except rarely, to add or subtract a lunar month — this device must be used. To the full moon found for the nearest elapsed centesimal year, if it falls in March, add a whole lunation; but if it falls in April, add the 31 days of March. For in either way a number is produced from which the epacts of the expanded years, when subtracted, leave the paschal full moon of March — unless more days than 31 have been left over. For then, once 31 days have been subtracted, the remaining days must be assigned to April, and the paschal full moon ascribed to that same month. In the same way, the epact of any expanded year whatever, taken from the paschal full moon of March (if it can be subtracted), will leave the paschal full moon of March, provided it does not fall before the 21st day. For when this happens, the epact of the expanded year must be subtracted from the higher number, which is formed from the March full moon together with a whole lunation. Likewise, if the full moon falls in April, a whole lunation must be added; for the epact of any expanded year whatever, subtracted from that full moon or from the number so formed, will leave the paschal full moon of April. Therefore, when it is established that the paschal full moon of some expanded year will fall in March,

the subtraction of that year's epact must be made from the paschal full moon of March, or from the number formed from that full moon and a whole lunation, or finally from the number formed from the April full moon and the 31 days of March. But if the full moon of the expanded year that is sought will belong to April, that year's epact must be taken from the April full moon, or from the number formed from that full moon and a whole lunation. Moreover, you will easily recognize from the epact of the expanded year whether the paschal full moon will fall in March or in April. For these epacts — 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13 — since they have Luna 14 in March, will likewise exhibit the full moon in March; but the other epacts throw the full moon into April.

For example: in the centesimal year 4200 the paschal full moon falls on April 13.H.21.Min.51.Sec.48; and if a whole lunation is added, one obtains April 43.H.10.Min.35.Sec.51. And from either of these two full moons the subtraction of the epact of any expanded year must be made, so that the paschal full moon may be found in April. Now if from the full moon D.13.H.21.Min.51.Sec.48 (the 31 days of March having first been added) a whole lunation is subtracted, the full moon of March D.15.H.9.Min.7.Sec.45 will be found — not indeed the paschal one; but if a whole lunation is added, there will result D.44.H.21.Min.51.Sec.48 of March, a number which is also formed from the 31 days of March added to the paschal full moon of April. Again, if to the full moon of March D.44.H.21.Min.51.Sec.48 a whole lunation is joined, the sum D.74.H.10.Min.35.Sec.51 of March results. And from either of these two numbers the subtraction of the epacts of the expanded years must be made, so that the paschal full moons may be found in March. And the same reasoning holds for the others. By this method we shall always have numbers from which we can subtract the epacts of the expanded years, and very rarely will another whole lunation have to be subtracted or added in order that the paschal full moon may be found.

[Margin: How the new and full moons before the correction are to be traced.] 5. New moons and full moons before the correction — and even those before the year 1600, after the corrected year — will be computed more easily from what was handed down in chapter 13. For after the year 1582 up to the year 1600 only the ten removed days are to be added; but before the correction nothing at all is to be added. And therefore it is not necessary that the method of computation explained in this chapter be adapted to those years which precede the year 1600.

CAPVT XXVI.

Caput XXVI.

On yet another, and very easy, method of computing the mean Paschal new moons and full moons after the correction.

[1] I do not wish to pass over in this place another new method of computing the Paschal new moons and full moons after the correction, one that presented itself to me when, at Chapter 24, Number 14, I was examining the progression of the new moons a little more attentively from one century to the next. Accordingly, the new moons of the years of the present little table, computed from Chapter 13, stand as follows. And if each new moon is subtracted from the one immediately below it, the progressions are found, just as they are set out in the other table below. But so that the new moon of the year 1900 can be subtracted from the new moon of the year 2000, one must take day 34 of March in place of 3 April; and these progressions do not differ from those we found above.

New moons of the years of this table.

| Anni | D. | H. | M. | S. | T. | Q. | Month |
|------|----|----|----|----|----|----|-------|
| 1600 | 14 | 8 | 34 | 54 | 20 | 0 | Mar. |
| 1700 | 20 | 16 | 48 | 24 | 28 | 32 | Mar. |
| 1800 | 26 | 1 | 1 | 54 | 37 | 4 | Mar. |
| 1900 | 31 | 9 | 15 | 24 | 45 | 36 | Mar. |
| 2000 | 3 | 17 | 28 | 54 | 54 | 8 | Apr. |

Now the method of computing the new moons and full moons will be established from these as follows. First let the new moons of the four preceding centuries be set out, as the roots of the other new moons to be computed, just as in the method of the preceding chapter. Then let a table of years be constructed, as follows:

Progressus Neomeniarum [Progression of the new moons].

| | D | H | M | Sec. | Ter. | Quar. |
|--|---|---|--------|------|------|-------|
| | . | . | . | | | |
| A cent. biss. ad non biss. [From a leap century to a non-leap] | 6 | 8 | 1
3 | 30 | 8 | 32 |

| | D | H | M | | | |
|---|---|---|--------|------|------|-------|
| | . | . | . | Sec. | Ter. | Quar. |
| A prima cent. non biss. ad non biss. [From the first non-leap century to a non-leap] | 5 | 8 | 1
3 | 30 | 8 | 32 |
| A secunda cent. non biss. ad non biss. [From the second non-leap century to a non-leap] | 5 | 8 | 1
3 | 30 | 8 | 32 |
| A tertia cent. non biss. ad biss. [From the third non-leap century to a leap] | 3 | 8 | 1
3 | 30 | 8 | 32 |

—just as in the preceding chapter, where in place of the epacts the progressions of the new moons are set down, in this order. Alongside the year 400 let the sum of the higher progressions be written, that is, D. 20. H. 8. Min. 54. Sec. 0. Ter. 34. Q. 8. Write this sum doubled alongside the year 800, tripled alongside the year 1200, and quadrupled alongside 1600, and so on in turn, always casting out a lunar month whenever it can be cast out. But when you reach 4000, where the progression of 400 years ceases, join together the progressions of the years 2000 and 4000, so that you may make the progression to be assigned to the year 6000. Double likewise the progression of the year 4000, so that the progression of the year 8000 may be formed. Finally join together the progressions of the years 4000 and 6000, so that the progression of the year 10000 may be composed. Double, triple, quadruple this, and so on, for the years 20000, 30000, 40000, and so on. In the same way too the progression of the year 100000 must be doubled, tripled, quadrupled, and so on, for the years 200000, 300000, 400000, and so on, and thus to infinity. Yet although, for this table of progressions to be set out correctly, it would have to be built up as far as the Fourths, in the table itself we have not gone beyond the Seconds; but whenever the Thirds are more than 30, we have added one Second to the Seconds. But here is the table of progressions, together with the table of roots both of the new moons and of the full moons.

Radices Nouiluniorum [Roots of the new moons].

| Indices radicum | Anni | D. | H. | M. | S. | Month |
|-----------------|------|----|----|----|----|-------|
| 0 | 1600 | 14 | 8 | 34 | 54 | Mar. |
| 1 | 1700 | 20 | 16 | 48 | 24 | Mar. |
| 2 | 1800 | 26 | 1 | 1 | 55 | Mar. |
| 3 | 1900 | 31 | 9 | 15 | 25 | Mar. |

Radices Pleniluniorum [Roots of the full moons].

| Indices radicum | Anni | D. | H. | M. | S. | Month |
|-----------------|------|----|----|----|----|-------|
| 0 | 1600 | 29 | 2 | 56 | 56 | Mar. |
| 1 | 1700 | 4 | 11 | 10 | 26 | Apr. |
| 2 | 1800 | 9 | 19 | 23 | 56 | Apr. |
| 3 | 1900 | 15 | 3 | 37 | 26 | Apr. |

Progressus Nouiluniorum, ac Pleniluniorum [Progression of the new moons and of the full moons].

The table is set in two panels across the page (left and right); Anni = the year, and the Progressus is given as D. (days) · H. (hours) · M. (minutes) · S. (seconds).

Left panel:

| Anni | D. | H. | M. | S. |
|-------|----|----|----|----|
| 400 | 20 | 8 | 54 | 1 |
| 800 | 11 | 5 | 3 | 58 |
| 1200 | 2 | 1 | 13 | 55 |
| 1600 | 22 | 10 | 7 | 56 |
| 2000 | 13 | 6 | 17 | 53 |
| 2400 | 4 | 2 | 27 | 51 |
| 2800 | 24 | 11 | 21 | 51 |
| 3200 | 15 | 7 | 31 | 49 |
| 3600 | 6 | 3 | 41 | 46 |
| 4000 | 26 | 12 | 35 | 47 |
| 6000 | 10 | 6 | 9 | 37 |
| 8000 | 23 | 12 | 27 | 30 |
| 10000 | 7 | 6 | 1 | 20 |
| 20000 | 14 | 12 | 2 | 40 |
| 30000 | 21 | 18 | 4 | 0 |
| 40000 | 29 | 0 | 5 | 21 |
| 50000 | 6 | 17 | 22 | 38 |
| 60000 | 13 | 23 | 23 | 58 |
| 70000 | 21 | 5 | 25 | 18 |
| 80000 | 28 | 11 | 26 | 38 |

| Anni | D. | H. | M. | S. |
|---------|----|----|----|----|
| 90000 | 6 | 4 | 43 | 55 |
| 100000 | 13 | 10 | 45 | 15 |
| 200000 | 26 | 21 | 30 | 31 |
| 300000 | 10 | 19 | 31 | 43 |
| 400000 | 24 | 6 | 16 | 58 |
| 500000 | 8 | 4 | 18 | 10 |
| 600000 | 21 | 15 | 3 | 25 |
| 700000 | 5 | 13 | 4 | 37 |
| 800000 | 18 | 23 | 49 | 53 |
| 900000 | 23 | 1 | 51 | 5 |
| 1000000 | 16 | 8 | 36 | 20 |
| 2000000 | 3 | 4 | 28 | 37 |
| 3000000 | 19 | 13 | 4 | 57 |
| 4000000 | 6 | 8 | 57 | 13 |
| 5000000 | 22 | 17 | 33 | 33 |
| 6000000 | 9 | 13 | 25 | 50 |

Right panel:

| Anni | D. | H. | M. | S. |
|----------|----|----|----|----|
| 7000000 | 25 | 22 | 2 | 10 |
| 8000000 | 12 | 17 | 54 | 26 |
| 9000000 | 29 | 2 | 30 | 46 |
| 10000000 | 15 | 22 | 23 | 3 |
| 20000000 | 2 | 8 | 2 | 3 |
| 30000000 | 18 | 6 | 25 | 6 |
| 40000000 | 4 | 16 | 4 | 6 |
| 50000000 | 20 | 14 | 27 | 9 |
| 60000000 | 7 | 0 | 6 | 9 |
| 70000000 | 22 | 22 | 29 | 12 |
| 80000000 | 9 | 8 | 8 | 12 |
| 90000000 | 25 | 6 | 31 | 15 |

| Anni | D. | H. | M. | S. |
|-------------|----|----|----|----|
| 100000000 | 11 | 16 | 10 | 15 |
| 200000000 | 23 | 8 | 20 | 31 |
| 300000000 | 5 | 11 | 46 | 43 |
| 400000000 | 17 | 3 | 56 | 58 |
| 500000000 | 28 | 20 | 7 | 13 |
| 600000000 | 10 | 23 | 33 | 26 |
| 700000000 | 22 | 15 | 43 | 41 |
| 800000000 | 4 | 19 | 9 | 53 |
| 900000000 | 16 | 11 | 20 | 8 |
| 1000000000 | 28 | 3 | 30 | 24 |
| 2000000000 | 26 | 18 | 16 | 44 |
| 3000000000 | 25 | 9 | 3 | 5 |
| 4000000000 | 23 | 23 | 49 | 25 |
| 5000000000 | 22 | 14 | 35 | 46 |
| 6000000000 | 21 | 5 | 22 | 6 |
| 7000000000 | 19 | 20 | 8 | 27 |
| 8000000000 | 18 | 10 | 54 | 47 |
| 9000000000 | 17 | 1 | 41 | 8 |
| 10000000000 | 15 | 16 | 27 | 28 |
| 20000000000 | 1 | 20 | 10 | 53 |
| 30000000000 | 17 | 12 | 38 | 21 |
| 40000000000 | 3 | 16 | 21 | 46 |
| 50000000000 | 19 | 8 | 49 | 15 |
| 60000000000 | 5 | 12 | 32 | 40 |

[Margin: How the new moon of any given centesimal year after the correction is to be computed.]

[2] Now, in order to compute the new moon of a given centesimal after the correction of the year, one must first choose a root from the four higher ones, as was said at Number 2 of the preceding chapter. This is done most easily if from the number expressed by thousands and hundreds you cast out all the 20s. If nothing is left over, the root of index 0 is to be assumed. But if something is left over, cast out all the 4s; and if indeed nothing remains, the same root of index 0 is

to be chosen; but if 1 is left over, the root of index 1; if 2, the root of index 2; and finally if 3, the root of index 3. Thus if in the place of the thousands and hundreds 00 is found, the root of index 0 is at once to be assumed.

Once the root has been chosen, let its centesimal year be subtracted from the given centesimal, and, entering the table of progressions with the remainder, let the corresponding progressions be extracted as often as need be. When these have been reduced into one sum together with the new moon of the chosen root, and a lunar month has been cast off as often as it can be, the required new moon in March will be obtained. But when the assembled sum is indeed greater than a lunar month, yet less than 31 days, the lunar month is not to be taken away; rather the sum itself will exhibit the Paschal new moon of March.

Let the Paschal new moon of the year 5000 be sought. Casting out 20 from 50 (the number expressed by thousands and hundreds), 10 remains; and casting out 4, 2 remains; therefore the root of index 2 is to be chosen. Its centesimal, 1800, subtracted from the given centesimal 5000, leaves 3200. Entering the table once with this number, extract the progression D. 15. H. 7. Min. 31. Sec. 49. If to this be added the new moon of the chosen root — namely of the year 1800 — that is, D. 26. H. 1. Min. 1. Sec. 55, the sum will be D. 41. H. 8. Min. 33. Sec. 44. And when the lunar month D. 29. H. 12. Min. 44. Sec. 3 has been taken away, the remainder gives the new moon of March, D. 11. H. 19. M. 49. Sec. 41, which is the Paschal one.

Again, let the Paschal new moon of the year 19480000 be investigated. The root of index 0 is to be chosen, because through thousands and hundreds the number is expressed as 00. Therefore, when the centesimal of that root, 1600, has been subtracted from the given centesimal, there remains the year 19478400. If, then, with the years here set alongside in the little table you enter the table of progressions, and gather all the progressions together with the Root into one sum, you will make D. 148. H. 18. M. 32. Sec. 30. If from this you subtract a revolution of the new moons, D. 147. H. 15. M. 40. Sec. 16, the remainder gives the new moon in March, D. 1. H. 2. Min. 52. Sec. 14, which is not the Paschal one. Therefore, when the synodic month is added, the Paschal new moon in March will come out as D. 30. H. 15. Min. 36. Sec. 17.

Worked computation for the year 19480000.

| | D. | H. | M. | S. |
|----------|----|----|----|----|
| 10000000 | 15 | 22 | 23 | 3 |
| 9000000 | 29 | 2 | 30 | 46 |

| | D. | H. | M. | S. |
|--|-----|----|----|----|
| 400000 | 24 | 6 | 16 | 58 |
| 70000 | 21 | 5 | 25 | 18 |
| 8000 | 23 | 12 | 27 | 30 |
| 400 | 20 | 8 | 54 | 1 |
| Radix [Root] | 14 | 8 | 34 | 54 |
| Summa [Sum] | 148 | 18 | 32 | 30 |
| Mens. Lu. detr. [Lunar month subtracted] | 147 | 15 | 40 | 16 |
| Nouil. Martij [New moon of March] | 1 | 2 | 52 | 14 |
| Mens. Lun. add. [Lunar month added] | 29 | 12 | 44 | 3 |
| Neom. Pasch. [Paschal new moon] | 30 | 15 | 36 | 17 |

Since, then, for this year Vieta [François Viète] gives the Epact xxix, which places the Paschal new moon on 8 March, it is plain — as I said above — that his equation, over ages so far removed, does not agree with the astronomical computation. As for his assertion that in this year 19480000, and also in 165580200, the astronomical computation does not diverge from his Epacts, it is not true, as is manifest from the threefold computation: namely the one I set out at Chapter 13, and the two I set out in these last two chapters. His computation, indeed, is thoroughly faulty. For his Epacts (once the days that are to be removed have first been subtracted), which he proposes in Proposition 9 in the common calendar, are defective, as is evident if they are compared with our Epacts of the preceding chapter. For example, take the year 100000, whose Epact he makes D. 16. H. 1. M. 24, when it ought to be D. 16. H. 1. M. 58. Sec. 38. From this it came about that, multiplying his own Epact by 1000 and removing from the product the revolutions of the new moons that can be removed, he found the Epact of the year 100000000 to be D. 23. h. 5. M. 18, when in truth it is only D. 17. h. 17. M. 47. Sec. 8. By the same reasoning he found the Epact of the year 60000000 to be D. 8. h. 0. M. 39, when ours is D. 22. h. 10. M. 57. Sec. 54. And in the same way he will be convicted of having erred in the rest of the Epacts. It is therefore no wonder that his computation happens, by accident, to agree in some fashion with the Epacts in certain very large years.

[Margin: The finding of full moons by means of the progressions.]

[3] The full moons will be computed in the same way, if in place of the roots of the new moons the roots of the full moons are used. For example, let the Paschal full moon of the year 4400 be sought. The root of index 0 is to be chosen; its year

1600, subtracted from the given year, leaves the year 2800, to which corresponds the progression D. 24. Hor. 11. Min. 21. Sec. 51. Added to the full moon of the root — that is, to D. 29. H. 2. M. 56. Sec. 56 of March — it produces the full moon in March, D. 53. H. 14. Min. 18. Sec. 47, that is (a month of March being taken off), 22 April, D. 22. Hor. 14. Min. 18. Sec. 47, which is not the Paschal one. Therefore, when the lunar month has been taken away (the 31 days of the month of March having first been added), the Paschal full moon will fall in March, D. 24. H. 1. Min. 34. Sec. 44.

Again, let the Paschal full moon of the year 3900 be sought. The root of index 3 is to be chosen; its year 1900, subtracted from the given year, leaves the year 2000, to which is owed the progression D. 13. H. 6. Min. 17. Sec. 53. When this is added to the full moon of the root, of April, D. 15. H. 3. Min. 37. Sec. 26, there will be formed the full moon of April, D. 28. Hor. 9. Min. 55. Sec. 19, which too is not the Paschal one. Therefore, when the lunar month has been taken away (the 31 days of March having first been added), there will remain the full moon in March, D. 29. Hor. 21. M. 11. Sec. 16.

[Margin: What is to be done for full moons in the expanded years, and in any month whatever.]

As for the new moons and full moons of the expanded years to be sought after a given centesimal — and likewise in any month of the year — let the same rules be observed that we prescribed at Numbers 3, 4, and 5 of the preceding chapter.

Chapter XXVII

Other critics who attacked the Gregorian calendar are refuted.

[Margin: What most people find fault with in the Gregorian calendar.]

1. Many others have ventured to fault this new Gregorian calendar, though on various grounds. Some object to the equation of the epacts, on the ground that it displays the new moons too late; but I think this was amply answered in chapter 19 and elsewhere. Others are displeased that these two epacts, xxv and xxiii, and likewise these, 25 and xxvj, are assigned to one and the same day. Yet the reason for this — namely, that the lunations should run alternately of 30 and 29 days — was set out by us in chapter 10. Still others maintain that Luna xiiii ought not to precede the mean opposition, lest we celebrate Easter at the very mean full moon itself, should it happen to fall on a Sunday, which they hold to be unlawful. That they are entirely mistaken in this, and hold an opinion contrary to the universal

custom of the Church, was shown in chapter 18 and in what we wrote in chapter 1, Numbers 6 and 7. Finally, there are those who would have the Moon anticipate by one day in 304 years, and not in $312\frac{1}{2}$, as we showed in chapter 8. To all these we make no other reply than what we demonstrated in that same chapter 8.

[Margin: Who framed a calendar of their own, different from the Gregorian.]

2. Among all those, however, to whom the Gregorian calendar seems not to have been correctly reformed, there are only two — Franciscus Vieta [François Viète] and Iosephus Scaliger [Joseph Scaliger] — who have framed calendars of their own, different from the Gregorian, and have persuaded themselves that they have hit the mark exactly. And since in chapter 24 it was shown more than sufficiently that Vieta's calendar goes wrong in many respects, I judge it worth my while to do the same, in this chapter, for Scaliger's. For although I have refuted this very thing at length and in full in a separate little book, which I issued against his *Castigatio* of the Gregorian calendar, it will nonetheless not be out of place to review here, briefly and summarily, his chief errors and faults — so that it may be plain to everyone that no calendar can be built better suited to the Church's use than the one Gregory XIII issued. For it scarcely seems possible that any calendar could be devised different from the Gregorian, Vieta's, and Scaliger's. If, then, the two latter are convicted of being erroneous, there will be no room to doubt that the first — that is, the Gregorian — is to be preferred to all, since it contains fewer drawbacks, and those (as I have shown) scarcely avoidable, than the others do.

[Margin: That Scaliger took the calendar of the Compendium for his own.]

3. First, then, Scaliger seized upon the Lilian calendar, which had been sent to the Christian princes by Gregory XIII, and passed it off as his own. In it, of course, the equation of the lunations — so that they may fall alternately of 30 and 29 days — is applied on the last day of March, by means of two epacts, ☉ [the *Compendium*'s circular epact-30 sign] and 29 (although he adopted o in place of ☉); and likewise on 29 May, 27 July, 24 September, and 22 November. He does, however, begin the arrangement of the epacts from March, not from January — which makes no difference, since the months of January and February do not disturb the Paschal months, on which the calendar's chief reckoning must rest. But in this equation he erred badly: at the same places, alongside epact j, he failed to set another sign — namely, * — of the same signification as ☉, as was done in the Lilian. For since he did not grasp the necessity of this, he is very often forced to intrude the same day, which runs counter to all the computists. This happens whenever the golden number 1 coincides with any one of these eight epacts: iiij, vij, xij, xv, xvij, xxij,

xxvj, xxix. For then, within the same nineteen-year cycle, both epact 29 and epact 30 — which $\odot$ and * signify, or, in Scaliger, the sign o — are in use, as is plainly established from the expanded table set out in the calendar of the *Compendium* at the beginning of this work. This absurdity is avoided if, with golden numbers greater than 11, one takes epact *, and not $\odot$ — just as in our Gregorian calendar we take, with those same golden numbers, epact 25 and not xxv.

He falls into a further and greater drawback. On the last day of February, which for him is the last day of the whole year, he did not write, next to epact xx, the epact 19, as was done in the Gregorian calendar on the last day of December. For unless this is done, the lunation begun on 30 January will, in his scheme, run to 59 days, if the golden number 1 then coincides with epact xix — as was explained in chapter 12, in the case of the lunation beginning on 2 December in our calendar with epact xix. I pass over the fact that he makes the Paschal months of epacts xxix, xxviii, xxvii, xxvj, xxv, xxiiii to be of 30 days, contrary to all the computists.

[Margin: What errors Scaliger committed in his own calendar.]

Since, then, we shall chiefly examine the Paschal Lunas xiiii in Scaliger's calendar, and show that they are for the most part false — on account of the placement of the epacts and their wrongly instituted equation — we shall here set before the reader only March and April, in which the Paschal new moons fall, omitting the other months. I shall say nothing here, however, of his table of equation by which he attempts to correct our equation as it advances through 400 years — the table entitled *Table of the equation of the epacts in the Tetracosimeteris, corrected* — in which he himself advances twice through 132 years and once through 136, in continuous order. Nothing, I say, shall I say of this table, both because he himself makes little of it, and because in chapters 5 and 18 we showed clearly enough that an equation applied at every hundredth year keeps the equinox more correctly in its own seat — that is, on 21 March — than if one waited for 134 years, or 132, or 136. So that I cannot sufficiently wonder that Scaliger supposes this alternation to be more easily grasped by the common people than our uniform advance through centuries of years.

Only his table of the equation of the epacts in the true tropical period, then, shall we weigh a little more carefully — the one in which it advances alternately through 132 and 136 years. This table he makes so much of that he has dared to propose it to all nations and peoples as a rule and standard of truth, as though fallen from heaven, to which the judgments of all in the correction of the calendar should be directed. And this table we have placed before the aforesaid

two months. There then follows another little table, of 19 years, with the Jewish new moons, which he sets up as the foundation of his whole calendar, and which he explains in nearly the words set down below.

Tables

Table of the equation of the epacts in the true tropical period

(Tabula æquationis Epactarum in iusta periodo tropica. Columns: Anni Christi correcti = Years of Christ, corrected | Aur. Num. = golden number | Lit. Domin. = dominical letter | Dies reiecti = days rejected | Epac. curr. = current epact | Epac. aureo num. 1. ref. = epact referred to golden number 1. The table is set in two panels on the page — years 1601–3609 at left, 3745–5217 at right — and is reproduced here as one continuous table.)

| Anni Christi
correcti | Aur.
Num. | Lit.
Domin. | Dies
reiecti | Epac.
curr. | Epac. aureo num. 1.
ref. |
|--------------------------|--------------|----------------|-----------------|----------------|-----------------------------|
| 1601 | 6 | G | 10 | 26 | 1 |
| 1733 | 5 | D | 11 | 15 | 1 |
| 1869 | 8 | C | 12 | 18 | 1 |
| 2001 | 7 | G | 13 | 6 | 0 |
| 2137 | 10 | F | 14 | 9 | 0 |
| 2269 | 9 | C | 15 | 26 | 28 |
| 2405 | 12 | B | 16 | 29 | 28 |
| 2537 | 11 | F | 17 | 19 | 29 |
| 2673 | 14 | E | 18 | 20 | 27 |
| 2805 | 13 | B | 19 | 9 | 27 |
| 2941 | 16 | A | 20 | 12 | 27 |
| 3073 | 15 | E | 21 | 29 | 25 |
| 3209 | 18 | D | 22 | 3 | 26 |
| 3341 | 17 | A | 23 | 20 | 24 |
| 3477 | 1 | G | 24 | 23 | 23 |
| 3609 | 19 | D | 25 | 9 | 21 |
| 3745 | 3 | C | 26 | 15 | 23 |
| 3877 | 2 | G | 27 | 3 | 22 |
| 4013 | 5 | F | 28 | 5 | 21 |

| Anni Christi
correcti | Aur.
Num. | Lit.
Domin. | Dies
reiecti | Epac.
curr. | Epac. aureo num. 1.
ref. |
|--------------------------|--------------|----------------|-----------------|----------------|-----------------------------|
| 4145 | 4 | C | 29 | 23 | 20 |
| 4281 | 7 | B | 30 | 26 | 20 |
| 4413 | 6 | F | 31 | 14 | 19 |
| 4549 | 9 | E | 32 | 16 | 18 |
| 4681 | 8 | B | 33 | 6 | 19 |
| 4817 | 11 | A | 34 | 9 | 19 |
| 4949 | 10 | E | 35 | 26 | 17 |
| 5085 | 13 | D | 36 | 28 | 16 |
| 5217 | 12 | A | 37 | 17 | 16 |

The order of the dominical letters is contained in this distich of Scaliger's:

*Gaude digne coli, gaude fax clara bonorum Felix esto bonis, ades & deuotus
amicis.*

(A mnemonic verse whose successive word-initials give the dominical-letter sequence; transcribed verbatim, not normalized.)

March and April (Scaliger's Paschal-month epacts)

(The two months are set side by side on the page. Columns: *Epactæ* = epact | *Lit. Do.* = dominical letter | *Dies* = day of month. Epact 30 is printed as Scaliger's sign o; the doubled month-end cell reads o.xxix.)

MARTIVS (March)

| Dies | Epactæ | Lit. Do. |
|------|--------|----------|
| 1 | o | d |
| 2 | xxix | e |
| 3 | xxviii | f |
| 4 | xxvii | g |
| 5 | xxvi | A |
| 6 | xxv | b |
| 7 | xxiiii | c |
| 8 | xxiii | d |
| 9 | xxii | e |

| Dies | Epactæ | Lit. Do. |
|------|--------|----------|
| 10 | xxi | f |
| 11 | xx | g |
| 12 | xix | A |
| 13 | xviii | b |
| 14 | xvii | c |
| 15 | xvi | d |
| 16 | xv | e |
| 17 | xiiii | f |
| 18 | xiii | g |
| 19 | xii | A |
| 20 | xi | b |
| 21 | x | c |
| 22 | ix | d |
| 23 | viii | e |
| 24 | vii | f |
| 25 | vi | g |
| 26 | v | A |
| 27 | iiii | b |
| 28 | iii | c |
| 29 | ii | d |
| 30 | j | e |
| 31 | o.xxix | f |

APRILIS (April)

| Dies | Epactæ | Lit. Do. |
|------|--------|----------|
| 1 | xxviii | g |
| 2 | xxvii | A |
| 3 | xxvi | b |
| 4 | xxv | c |
| 5 | xxiiii | d |
| 6 | xxiii | e |

| Dies | Epactæ | Lit. Do. |
|------|--------|----------|
| 7 | xxii | f |
| 8 | xxi | g |
| 9 | xx | A |
| 10 | xix | b |
| 11 | xviii | c |
| 12 | xvii | d |
| 13 | xvi | e |
| 14 | xv | f |
| 15 | xiiii | g |
| 16 | xiii | A |
| 17 | xii | b |
| 18 | xi | c |
| 19 | x | d |
| 20 | ix | e |
| 21 | viii | f |
| 22 | vii | g |
| 23 | vi | A |
| 24 | v | b |
| 25 | iiii | c |
| 26 | iii | d |
| 27 | ii | e |
| 28 | j | f |
| 29 | o | g |
| 30 | xxix | A |

Little table of the Jewish new moons

(*TABELLA NEOMENIARVM Iudaicarum. Columns: Aur. Num. = golden number | Anni Chri. = year of Christ | Lit. Dominicales = dominical letter(s) | Neomeniæ Iudaicæ [Feriæ = weekday, Horæ = hours, Scru. 1080 = remainder in 1080ths] | Dies Mensiū Scaligeri = day of Scaliger's month, with M = March, A = April | Epactæ = epact. The leftmost margin prints the label "Adar" beside the two leap years in which — per the facing prose — Adar is taken for Nisan.*)

| Aur.
Num. | Anni
Chri. | Lit.
Dominicales | Fer
iæ | H
or
æ | Scru.
1080 | Dies Mensiū
Scaligeri | Epa
ctæ | M
on
th |
|--------------|---------------|---------------------|-----------|--------------|---------------|--------------------------|------------|---------------|
| 1 | 1577 | B | 3 | 13 | 256 | 29. M | 2 | |
| 2 | 1578 | A | 7 | 22 | 52 | 19. M | 12 | |
| 3 | 1579 | G | 5 | 6 | 928 | 8. M | 23 | A
da
r |
| 4 | 1580 | F E | 4 | 4 | 437 | 26. M | 5 | |
| 5 | 1581 | D | 1 | 13 | 233 | 15. M | 16 | |
| 6 | 1582 | C | 7 | 10 | 822 | 3. A | 26 | |
| 7 | 1583 | B | 4 | 19 | 618 | 24. M | 7 | |
| 8 | 1584 | A G | 2 | 4 | 414 | 12. M | 19 | |
| 9 | 1585 | F | 1 | 1 | 1003 | 31. M | 29 | |
| 10 | 1586 | E | 5 | 10 | 694 | 20. M | 11 | |
| 11 | 1587 | D | 2 | 19 | 595 | 10. M | 21 | A
da
r |
| 12 | 1588 | C B | 1 | 17 | 104 | 27. M | 4 | |
| 13 | 1589 | A | 6 | 1 | 980 | 17. M | 14 | |
| 14 | 1590 | G | 4 | 23 | 489 | 5. A | 24 | |
| 15 | 1591 | F | 2 | 8 | 285 | 25. M | 6 | |
| 16 | 1592 | E D | 6 | 17 | 81 | 13. M | 18 | |
| 17 | 1593 | C | 5 | 14 | 670 | 1. A | 28 | |
| 18 | 1594 | B | 2 | 23 | 466 | 22. M | 9 | |
| 19 | 1595 | A | 7 | 8 | 262 | 11. M | 20 | |

The following passage (set in *italic* in the source) is Scaliger's own explanation of the little table above, quoted by Clavius — "in nearly the words set down below":

4. Let us suppose that the Lilian form had obtained from the beginning of the years of Christ, and from the year of Christ 5337 let us set up the nineteen-year lunar cycle, with the Jewish new moons added — those whose full moons do not fall before 21 March in the Lilian [calendar] — to which new moons, after the manner of the Jews, a weekday is prefixed, a weekday that changes as often as the following hours have

reached 18. We have also added the dominical letter, to mark in the calendar the epoch of the new moon, as you have it in the table. In it you first see the line of years of the golden number, from the year of Christ 1577 to the year 1595. Then follows the dominical letter. In the fourth place [stands] the Jewish new moon, which is always Nisan — except in years 3 and 11, in which Adar is taken for Nisan, because its full moon falls after 20 March. The first number of the Jewish new moon is the weekday; the second, the hours of the Moon's mean motion; the third, the remainder out of 1080 scruples. Example: In the first year of the cycle, that is, in the year 1577, the new moon was 3, 13, 256. The first number indicates that the new moon fell on the third weekday [Tuesday]. And since the dominical letter is B, the third weekday will therefore be the letter D; and consequently the Jewish new moon of Nisan fell on 29 March, at hour 13, [scruple] 256, from the beginning of the night that precedes the day in question, the 29th. But when the hours have reached 18 or beyond, then the weekday is increased by one. For example, in the second year of the cycle the new moon was 7, 22, 52. Because the hours passed beyond 17, [scruple] 1079, therefore in place of weekday 7 the first weekday is to be taken — that is, the letter A for G — and so always.

Let us, then, examine this calendar, and the two tables attached to it — which Scaliger extols to the skies — a little more attentively. But lest anyone suppose that in our examination we are not taking Scaliger's *true* epacts, let us first show by what method he himself derives the epacts of any given year from the perpetual Cycle of epacts — the very one we set down both in the Gregorian calendar and in chapter 12, Number 6 — except that in it, in place of *, he takes o, and in the sixth cell, leaving aside epact 25, he takes only xxv. This, then, is the path he enters upon. In the last row of the table of the equation of the epacts he takes the epact answering to golden number 1 for the proposed year, or, if that year is not found in the first row, for the nearest lesser year. From this epact he counts, in the perpetual Cycle of epacts, 1, 2, 3, and so on, up to the golden number of the proposed year; for the end of the counting will fall on the epact sought. For example: I want the epact of the year 2001, whose golden number is 7. And since in that [period] the epact answering to golden number 1 is o, we shall count in the perpetual Cycle, from the first cell (epact * or o), the golden number of the proposed year, 7, and we shall land on epact vi in the seventh cell. Again, let the year 2595 be proposed, which is not entered in the table. To the nearest lesser year in the table, 2537, epact 29 is assigned as answering to golden number 1. If, then, from epact xxix we count in the perpetual Cycle 12 — which is the golden number of the given year 2595 — we shall find epact o, of the first cell.

Finally, let the given year be 3195, whose golden number is 4. Opposite the year 3073, the nearest lesser in the table, epact 25 is found answering to golden number 1. Counting, then, in the perpetual Cycle from epact xxv the four units of the golden number 4, we shall arrive at epact xxviii. And so with the rest.

[Margin: That the little table of Jewish new moons proposed by Scaliger does not sufficiently agree with the perpetual cycle of epacts.]

First, then, as regards the upper table of 19 years of one cycle, from 1577 to 1595, I find your consistency wanting, most learned Scaliger. For I do not find it to agree either with your own perpetual Cycle of epacts or with your doctrine. Since in the table of the true tropical period you would have epact j answer to golden number 1 from the year 1601, tell me, please: why, for the year 1577 — which is only 24 years distant from 1601, so that no change could have occurred in the Moon — do you assign to that same golden number 1 the epact ij ? Or, if for the year 1577 you attach epact ij to golden number 1, why do you not assign that same epact ij to the same golden number 1 for the year 1601? Reason would surely require it. Or do you perhaps hold that epact ij is to be assigned to golden number 1 for the year 1577 in order to serve the Jewish new moons, which you placed on 29 March? If you accept this, the error will creep further. For you will see that most of the epacts of the remaining 18 years of that little table prove to be faulty. For as often as epact ij answers to golden number 1, there will answer, from your perpetual Cycle, to the other golden numbers, throughout the same nineteen-year cycle, the epacts of this table which we have subjoined here — of which epacts very many differ entirely from those you have noted in that table of yours.

(First comparison, golden numbers 1–19. Row labels as printed: Aur. Num. = golden number | Ep. Cyc. perp. = epact from the perpetual Cycle | Epact. Scal. = Scaliger's epact.)

| | | | | | | | | | | | | | | |
|--------------|------|------|-----|-----|----|------|------|------|-----|-----|------|------|------|-----|
| | | | | | | | | | 1 1 | 1 | | 1 | | 1 1 |
| Aur. Num. | 1 2 | 3 | 4 5 | 6 | 7 | 8 | 9 | 0 1 | 2 | 13 | 14 | 5 16 | 17 | 8 9 |
| Ep. Cyc. | i xi | xxii | v x | xx | vi | x o | | x x | ii | xii | xxv | v xv | xxv | i x |
| perp. | j ij | ij | v | vij | ij | i | | i xi | j | ij | | j ij | iiij | x x |
| | | | j | | | x | | j | | | | | | |
| Epact. Scal. | i xi | xxii | v x | xx | vi | x x | x x | x x | ii | xii | xxii | v xv | xxv | i x |
| | j j | j | v | vj | j | i xi | i xj | ij | ij | ij | j ij | iiij | iiij | x x |
| | | | j | | | x x | | | | | | | | |

See — the epacts of this table agree with yours in only ten places, namely in years 1, 4, 5, 8, 10, 13, 15, 17, 18, 19 of the cycle; in the rest they differ. But if, for the year 1577, epact 1 be assigned to golden number 1 — just as from the year 1601, as is proper (for in that year, since as yet no day but 10 has been rejected, the Moon does not yet need any equation) — a much greater difference will appear, as this other table shows.

(Second comparison, golden numbers 1–19. Row labels as printed, including the label variants: Ep. Cyc. perp. / Ep. Cyc.perp. and Epact. Scalig. / Epacta Scalig.)

| Aur. Num. | 2 3 | | 4 | 5 | 6 | 7 | 8 | 9 | 1 1 | | 13 | 14 | 16 | 17 | 1 | 1 |
|-----------|-----|------|----|---|----|---|------|---|-----|----|-----|------|------|------|----|---|
| | 1 | 2 | | | | | | | 1 | 2 | | | | | 8 | 9 |
| Ep. Cyc. | x | xx | ii | x | x | v | xv | x | x | ij | xii | xxi | xv | xxv | v | x |
| perp. | i | iiij | ij | v | x | i | iiij | x | x | | j | iiij | j | ij | ii | i |
| | j | | | | vj | j | | i | j | | | | | | j | x |
| | | | | | | | | x | | | | | | | | |
| Epact. | x | xx | v | x | x | v | xi | x | x | ii | xii | xxi | xv | xxv | i | x |
| Scalig. | i | iiij | | v | x | i | x | x | x | ij | ij | iiij | iiij | iiij | x | x |
| | j | | | j | v | j | | i | j | | | | | | | |
| | | | | | i | | | x | | | | | | | | |

Do you see that the epacts agree in only seven places — namely, in years 2, 3, 6, 7, 9, 11, 14 of the cycle? And that at golden numbers 12 and 16 there is a difference of two units? — which is utterly absurd, as the calculation will presently show. Moreover, that epact iiij of golden number 12 has been produced from the preceding epact by the addition of 13 units? — which is altogether monstrous and wholly foreign to the reckoning of new moons; unless perhaps, in the expanded table, one must ascend to the row above while the golden number 19 is nevertheless running, as we set forth in chapter 12, Number 14. You will say that this happened through the intervention of the bissextile [leap day]: I grant it. But answer me this too: why did the same not happen in years 4, 8, and 16, which are likewise bissextile? Why should these be in a worse condition (to use your own words) than that one?

Certainly the lunations of any given year cannot recede from the lunations of the immediately preceding year, toward the beginnings of the months, by more than 11 days — at most 12 in a bissextile year — since the epact of a single year is 10 days, 15 hours, 11 minutes, 22 seconds if it is a common year, but 11 days, 15 hours, 11 minutes, 22 seconds if it is bissextile, as we explained in chapter 13. Yet the lunations marked by your epacts for year 12 stand 13 days distant from the

lunations of year 11 that the epacts indicate — except in those months which assign two epacts, 0 and xxix, to the same day. This is plain in May and April. For from epact xxj in May, which shows the new moon in year 11, to epact iiij, by which you would mark the new moon in year 12 in April, 13 days are counted — although the calculation exhibits the difference between these two mean new moons as only 11 days, 15 hours, 11 minutes, 21 seconds, a figure that is less than twelve days, let alone thirteen.

Come now, let us consult the calculation. In the year 1587 the mean new moon of May fell on day 6, hour 23, minute 50, second 31. But in the year 1588 the mean new moon in April occurs on day 25, hour 8, minute 39, second 10 — although your epact iiij places it on day 25, well before the mean new moon, which must be assigned to day 26. Now if we subtract 25 April, hour 8, minute 39, second 10 from 6 May — that is, from 36 April, hour 23, minute 50, second 31 — there will remain the stated difference of 11 days, 15 hours, 11 minutes, 21 seconds. Where, I ask, is the difference of 13 days here? But perhaps I suppose that this holds only for the mean new moons of the said years, not also for the true ones. On the contrary, it holds no less for the true than for the mean: for the true new moons of these same two years and months do not stand 13 whole days apart from each other either, as is clear from the Ephemerides of Giovanni Antonio Magini [Magini]. You see into what snares the Jewish new moons have led you, from which you can never extricate yourself — namely, that you anticipate the celestial new moons and set one further apart from another than reason requires; which is nothing else than to confound and disturb the whole reckoning of new moons.

But let us also compare some of your fourteenth days of the Moon [Lunae xiiij] for these same years, both with ours and with the mean full moons, so that we may see which of us has more correctly arranged the epacts in the calendar for the use of the Church, and more correctly chooses the epacts for indicating the ecclesiastical new moons — so that from this too it may appear that the new moons have not been correctly marked by you, and that without cause the even progression of the epacts by the number eleven has been interrupted by you, in order that you might dispose the new moons otherwise. For this is the only reason you can allege in your favor as to why the epacts of the aforesaid 19 years differ from the epacts of the perpetual cycle and do not advance evenly by 11. For since the new moons must be so established (as I taught in chapter 18, Number 4) that the fourteenth days of the Moon do not run ahead of the full moons by two days — lest, if the following fourteenth day were a Sunday, Easter should be celebrated before the full moon — we shall discover from the calculation that you

have very rarely observed this. Here is the table, with the epacts, the fourteenth days of the Moon, and the mean full moons.

| Anni
Domi
ni | Au
r.
Nu. | Epact.
Greg. | Epact.
Scal. | Lun. xiiij.
Greg. | Lun. xiiij.
Scalig. | Pleniluni
a media | Dies, quibus
xiiij. Scalig.
praeueniunt
plenil. |
|--------------------|-----------------|-----------------|-----------------|----------------------|------------------------|----------------------|--|
| 1577 | 1 | 1 | 2 | 12 A | 11 A | 12 A H.
10 | 2 |
| 1581 | 5 | 15 | 16 | 29 M | 28 M | 29 M H.
10 | 2 |
| 1586 | 10 | 10 | 11 | 3 A | 2 A | 3 A H. 18 | 2 |
| 1588 | 12 | 2 | 4 | 11 A | 9 A | 10 A H.
14 | 2 |
| 1589 | 13 | 13 | 14 | 31 M | 30 M | 0 A H. 1 | 3 |
| 1591 | 15 | 5 | 6 | 8 A | 7 A | 8 A H. 5 | 2 |
| 1592 | 16 | 16 | 18 | 28 M | 26 M | 27 A H.
14 | 2 |
| 1593 | 17 | 27 | 28 | 16 A | 14 A | 15 A H.
12 | 2 |
| 1595 | 19 | 19 | 20 | 25 M | 24 M | 25 M H.
5 | 2 |

We assign the full moon that occurs after noon to the following day, following the doctrine of all who have written on the computus — a thing you yourself will not deny, since you attribute to the following day the new moon that follows the preceding sunset by 18 hours. When, therefore, your fourteenth day precedes the full moon by two days, know that you sin against the canons. For if your fifteenth day of the Moon were a Sunday, you would celebrate Easter before the full moon — that is, on the true fourteenth day of the Moon — which the canons do not permit. And when your fourteenth day runs ahead of the full moon by nearly three days — as happens in the year 1589 — Easter would be celebrated two days before the full moon, on the thirteenth day of the Moon, before the Jewish Passover; which is more absurd still.

But perhaps you will say: What of it? Does your own fourteenth day of the Moon anticipate nothing that year? It does indeed anticipate somewhat, yet by a full day less than yours; and this arises from the nature of the cycle. For a cycle

arranged in the calendar in any way whatever cannot avoid every drawback. This one thing we must take the greatest care over: that it be so arranged as to contain the fewest possible errors. And this we are confident we have achieved in the Gregorian calendar, since far fewer errors are to be noted in it than in yours — as appears partly from the aforesaid table of 19 years, and partly, and far more evidently, in the examination of your table of the equation of the true tropical period. Further, in these 9 years of the earlier table, even if not your fifteenth day of the Moon but the sixteenth were a Sunday, Easter would nevertheless be celebrated after the fifteenth day of the Moon (as you have wrongly, and against the canons, decreed must be done) — in

on the full moon itself — which, however, you utterly deny to be permissible. And so you clothe yourself in the very thing you feared. Therefore, whether Easter is celebrated next after the fourteenth Moon or after the fifteenth, it is established that your Jewish new moons are false in the aforesaid 9 years. What is more — and this is more intolerable — against all the writers on computus you place, in those same 9 years, the epacts on the very days on which the mean new moons occur. You have here, then, my dear Joseph [Scaliger], how false and how deceptive is that table of yours of 19 years, which nevertheless you make the foundation of your table for the equation of the true tropical period [tabula æquationis iustæ periodi tropicæ]. And so, since it rests on so weak a foundation, it must plainly be ruinous — as will at once become clear from an examination of it.

[Margin: That Scaliger, in altering the epacts, took no account of the postposition of the Moon, nor of the excluded days.]

5. FIRST, then, I observe that in altering the epacts which correspond to golden number 1 you took no account of the anticipation of the new moons — which you assert to occur over the course of 304 years — nor of the excluded days, each of which demands that the current epact be changed into a lower one. This is indeed a very great error, and it heads a whole family of errors. For before 304 years have elapsed from the epoch, or radix, the current epact must be changed into a lower one as many times as days have been excluded. But as often as 304 years have elapsed, that many units must be subtracted from the number of rejected days, so that the remainder may show by how many units a smaller — that is, a lower — epact must be assumed. This you did not observe; instead you trusted only the Jewish new moons of the 19-year table above, which drove you into

error, as we said before. Go now, and trust the Jews, that you may win the reward of your credulity!

But see the fraud into which you have fallen through the Jewish new moons. From the year 1581 to 1733, 304 years have not yet elapsed, and so the Moon needs no equation. Since, therefore, in 1733 one day is removed, the epact 2 running with golden number 1 (seeing that in golden number 5 of the year 1581 the epact 16 [xvj] corresponds) must be changed into the lower epact 1 — which you did, and rightly.

Next, neither from 1584 to 1869 are 304 years counted; so when in 2869 [recte: 1869] another day is removed, and consequently two days are then rejected after the correction, the epact 17 [xvij] ought to be assumed, smaller by two units than the epact 19 [xix] which runs with golden number 8 in 1584. Hence to golden number 1 there ought to correspond the epact 0, or *, and not the epact 1, as you have it in your table.

Again, from 1583 to 2001, 3 days will have been removed, and 304 years are counted once; therefore the epact to be assumed would be 5 [v], smaller by two than the epact 7 [vij], which in 1583 corresponds (on your own authority) to golden number 7 — that is, the epact of golden number 1 ought to be 29, and not 0 as you would have it.

Moreover, from 1587 to 2537, 304 years are contained three times. So, subtracting the ternary from the 7 days that will then have been removed, 4 remain; and by that many units a smaller epact ought to be assumed than the epact 21, which corresponds to golden number 11 in 1587 — that is, the epact 17. And therefore to golden number 1 the epact 27 must be assigned, whereas you assign the epact 29.

Furthermore, from 1595 to 3609, 304 years are reckoned six times. Therefore, if you subtract the six from the 15 days that will then have been excluded, 9 remain. So from the epact 20, which corresponds to golden number 19 in 1595, 9 must be taken away, leaving the epact 11 [xj] answering to that same golden number 19 in the year 3609; and thus to golden number 1 the epact 23 will be owed — and yet you assign the epact 21 to golden number 1. Do you see how great and how grave the collapses are? Finally, if we should wish to examine other years of the table of the true tropical period in the same way — taking from your 19-year table the year that has the same golden number as the year assumed in the table of the true period — we shall find that you very rarely assign to golden number 1 the epact that the reckoning of the Moon's anticipation and postposition requires.

And what other cause is there of an error so great and so widely and far diffused, except that you assigned the epacts solely to the Jewish new moons? From this it follows necessarily that intolerable errors arise in the new moons and the fourteenth Moons, as the appended table of 50 years shows. In it we set down, first, the years of the Lord; then their golden numbers; third, the epacts of the Gregorian Calendar. The fourth column contains the epacts that are perpetually derived from the Cycle of Epacts by means of the epacts which correspond to golden number 1 in the table of the true period. The fifth holds the fourteenth Moons that the epacts mark in the Gregorian Calendar; the sixth, the fourteenth Moons of the Scaligerian epacts; the seventh, the mean full moons according to the intercalation of the Gregorian Calendar; the eighth, the same full moons according to Scaliger's intercalation. The ninth comprises the Dominical letters by the method of the Gregorian Calendar; the tenth offers the same letters according to Scaliger's method. In the eleventh we have noted the days rejected according to the equation of the Gregorian Calendar, and in the twelfth, finally, the days excluded according to Scaliger's equation. Whenever your fourteenth Moons run two days ahead of the mean oppositions, you must admit that you investigate the epacts wrongly and do not arrange them correctly in the Calendar — as was said above in the examination of the 19-year table from the year 1577 to the year 1595 — since by them the fourteenth Moons are found falsely. Furthermore, a full moon falling on some day after noon must be assigned to the following day, as we also noted above. The calculation of the mean oppositions here employed is, as elsewhere, by means of the tables of epacts which we composed in chapter 13; and from this calculation that one does not differ much which is made through the new moons of 76 years in chapter 14, or the one we set forth in chapters 25 and 26.

Comparison table of 50 years — Gregorian versus Scaligerian reckoning (folio 545)

Legend: **Aur.** = golden number [Aureus Numerus]; **Ep. G / Ep. S** = epact (Gregorian / Scaligerian), where * = epact 30 (new-Calendar sort) and 0 = Scaliger's zero; **L14 G / L14 S** = fourteenth Moon [Luna xiiij]; **Plen. G / Plen. S** = mean full moon, given as **day·hour** with month letter; **L.D. G / L.D. S** = Dominical letter [Litera Dominicalis]; **D.ex. G / D.ex. S** = days removed [Dies exempti]. Month letters: **A** = April [Aprilis], **M** = March [Martius].

| Anni
Domini | A
ur
. | Ep.
G | Ep.
S | L1
4 G | L1
4 S | Plen.
G | Plen. S | L.D.
G | L.D.
S | D.ex.
G | D.ex.
S |
|----------------|--------------|----------|----------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| 1715 | 6 | 25 | 26 | 18
A | 16
A | 18·4 A | 17·4 A | F | E | 11 | 10 |
| 1734 | 6 | 25 | 26 | 18
A | 16
A | 17·20
A | 17·20
A | C | C | 11 | 11 |
| 1737 | 9 | 28 | 29 | 15
A | 13
A | 14·11
A | 14·11
A | F | F | 11 | 11 |
| 1753 | 6 | 25 | 26 | 18
A | 16
A | 17·13
A | 17·13
A | G | G | 11 | 11 |
| 1775 | 9 | 28 | 29 | 15
A | 13
A | 14·21
A | 14·21
A | A | A | 11 | 11 |
| 1783 | 17 | 26 | 27 | 17
A | 15
A | 16·9 A | 16·9 A | E | E | 11 | 11 |
| 1791 | 6 | 25 | 26 | 18
A | 16
A | 17·22
A | 17·22
A | B | B | 11 | 11 |
| 1794 | 9 | 28 | 29 | 15
A | 13
A | 14·13
A | 14·13
A | E | E | 11 | 11 |
| 1802 | 17 | 26 | 27 | 17
A | 15
A | 17·2 A | 16·2 A | C | B | 12 | 11 |
| 1813 | 9 | 28 | 29 | 15
A | 3 A | 16·6 A | 14·6 A | C | B | 12 | 11 |
| 1851 | 9 | 28 | 29 | 15
A | 13
A | 15·15
A | 14·15
A | E | D | 12 | 11 |
| 1859 | 17 | 26 | 27 | 17
A | 15
A | 17·3 A | 17·3 A | B | A | 12 | 11 |
| 1878 | 17 | 26 | 27 | 17
A | 15
A | 16·20
A | 6·20 A | F | F | 12 | 12 |
| 1897 | 17 | 26 | 2 | 17
A | 15
A | 16·12
A | 16·12
A | C | C | 12 | 12 |
| 1911 | 2 | * | 2 | 13
A | 11
A | 13·7 A | 1·7 A | A | G | 13 | 12 |
| 1919 | 1 | 29 | 1 | 14
A | 12
A | 14·20
A | 13·0 A | E | D | 13 | 12 |

| Anni
Domini | A
ur
. | Ep.
G | Ep.
S | L1
4 G | L1
4 S | Plen.
G | Plen. S | L.D.
G | L.D.
S | D.ex.
G | D.ex.
S |
|----------------|--------------|----------|----------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| 1938 | 1 | 29 | 1 | 14
A | 12
A | 14·13
A | 13·13
A | B | A | 13 | 12 |
| 1957 | 1 | 29 | 1 | 14
A | 12
A | 14·5 A | 13·5 A | F | E | 13 | 12 |
| 1987 | 2 | * | 2 | 13
A | 11
A | 13·2 A | 12·2 A | D | C | 13 | 12 |
| 1995 | 1 | 29 | 1 | 14
A | 12
A | 14·14
A | 13·14
A | A | G | 13 | 12 |
| 2215 | 12 | 29 | 1 | 14
A | 12
A | 14·8 A | 13·8 A | A | G | 15 | 14 |
| 2219 | 16 | 13 | 15 | 31
M | 29
M | 31·14
M | 30·8 M | C | B | 15 | 14 |
| 2223 | 1 | 28 | 0 | 15
A | 13
A | 15·21
A | 14·21
A | E | D | 15 | 14 |
| 2234 | 12 | 29 | 1 | 14
A | 12
A | 14·1 A | 13·1 A | E | D | 15 | 14 |
| 2238 | 16 | 13 | 15 | 31
M | 29
M | 31·1 M | 30·1 M | G | F | 15 | 14 |
| 2519 | 12 | 28 | 29 | 15
A | 13
A | 15·9 A | 14·9 A | A | G | 17 | 16 |
| 2537 | 11 | 17 | 19 | 27
M | 25
M | 27·4 M | 27·4 M | F | F | 17 | 17 |
| 2538 | 12 | 28 | 0 | 15
A | 13
A | 15·1 A | 15·1 A | E | E | 17 | 17 |
| 2557 | 12 | 8 | 0 | 15
A | 13
A | 14·18
A | 14·18
A | B | B | 17 | 17 |
| 2575 | 11 | 17 | 19 | 27
M | 25
M | 27·13
M | 27·13
M | A | A | 17 | 17 |
| 2594 | 11 | 17 | 19 | 27
M | 25
M | 27·5 M | 27·5 M | E | E | 17 | 17 |
| 2595 | 12 | 28 | 0 | 15
A | 13
A | 15·3 A | 15·3 A | D | D | 17 | 17 |

| Anni Domini | A
ur
. | Ep.
G | Ep.
S | L1
4 G | L1
4 S | Plen.
G | Plen. S | L.D.
G | L.D.
S | D.ex.
G | D.ex.
S |
|-------------|--------------|----------|----------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| 2910 | 4 | 28 | 0 | 15
A | 13
A | 15·7 A | 14·7 A | E | D | 20 | 19 |
| 2919 | 13 | 7 | 9 | 6 A | 4 A | 6·5 A | 5·5 A | A | G | 20 | 19 |
| 2957 | 13 | 7 | 9 | 6 A | 4 A | 5·14 A | 5·14 A | B | B | 20 | 20 |
| 2995 | 13 | 7 | 9 | 6 A | 4 A | 5·23 A | 5·23 A | D | D | 20 | 20 |
| 3014 | 13 | 7 | 9 | 6 A | 4 A | 6·16 A | 5·16 A | B | A | 21 | 20 |
| 5033 | 13 | 7 | 9 | 6 A | 4 A | 6·8 A | 5·8 A | F | E | 21 | 20 |
| 3071 | 13 | 7 | 9 | 6 A | 4 A | 6·17 A | 5·17 A | A | G | 21 | 20 |
| 3119 | 4 | 27 | 28 | 16
A | 14
A | 16·21
A | 15·21
A | E | D | 22 | 21 |
| 3138 | 4 | 27 | 28 | 16
A | 14
A | 16·14
A | 15·14
A | B | A | 22 | 21 |
| 3157 | 4 | 27 | 28 | 16
A | 14
A | 16·6 A | 15·6 A | F | E | 22 | 21 |
| 3195 | 4 | 27 | 28 | 16
A | 14
A | 16·16
A | 15·16
A | A | G | 22 | 21 |
| 3209 | 18 | 1 | 3 | 12
A | 10
A | 11·11
A | 11·11
A | D | D | 22 | 22 |
| 3247 | 18 | 1 | 3 | 12
A | 10
A | 11·20
A | 11·20
A | F | F | 22 | 22 |
| 3266 | 18 | 1 | 3 | 12
A | 10
A | 11·12
A | 11·12
A | C | C | 22 | 22 |
| 3285 | 18 | 1 | 3 | 12
A | 10
A | 11·5 A | 11·5 A | G | G | 22 | 22 |
| 4110 | 7 | 26 | 27 | 17
A | 15
A | 17·11
A | 16·11
A | E | D | 29 | 28 |
| 4710 | 18 | 24 | 26 | 18
A | 16
A | 18·21
A | 17·21
A | B | A | 34 | 33 |
| 4713 | 2 | 28 | 0 | 15
A | 13
A | 15·12
A | 14·12
A | E | D | 34 | 33 |

We have omitted the minutes of the hours in this table, taking a whole hour in their place whenever they exceeded the number 30. Moreover, we have gathered so many examples in this and the following tables not so much to set the errors of the Scaligerian epacts before your eyes, as to teach that the Gregorian epacts correctly indicate the paschal fourteenth Moons according to the prescription of the Canons — which will indeed appear clearly, if the Gregorian fourteenth Moons are compared with the Gregorian mean full moons, and the Scaligerian fourteenths with the Scaligerian mean full moons.

[Margin: That Scaliger's fourteenth Moons very often fall two days — or even three — before the Gregorian fourteenths.]

In all these years (I have passed over a good many others in which the same thing happens — for either there are examples enough, or I do not know what "enough" is) your fourteenth Moons always run two days ahead of ours, and by about as many days — sometimes even three (as in the years 2575, 2594, 2595) — they precede the full moons. From this it follows that, if the next following day were a Sunday, Easter — according to your epacts, and by the prescription of the Church (which always celebrates that solemnity on the Sunday next after the fourteenth Moon, as we have shown more than once) — would have to be celebrated one day before the full moon, and sometimes even two days before, if a full moon that falls after noon must be assigned to the following day, as reason requires. For although an Easter in which the full moon falls before sunset is not altogether illegitimate, as we wrote in chapter 22, number 4, it must nevertheless be avoided in the Cycle as far as possible, so that it happens very rarely. That it is against the Canons and the Decrees of the Fathers for Easter to be kept before the full moon, not even you deny, since you do not permit it to be celebrated even on the full moon itself. Indeed, even if Easter had to be celebrated after the fifteenth Moon (which you, with some others, obstinately maintain), it could still be celebrated on the full moon itself — which you do not approve — or even, against the Canons, before the full moon. It is established, then, that your epacts are neither rightly ordered in the Calendar nor rightly traced from your table, since their fourteenths anticipate the mean oppositions more than is proper. And although this error is for the most part corrected by the current Dominical letter — which very often follows the fourteenth by more than two days — the epacts are not on that account to be judged free of fault in themselves.

What of this: if we used your Calendar, more than once we should in fact celebrate Easter after the fourteenth Moon (which is the ancient custom of the Church) but before the full moon? This would happen in the years 1737, 1791,

1859, 1957, 2575, 2995, 3195, 3266. For in all of these the year's own Dominical letter follows your fourteenth Moon closely, but the mean opposition not closely; and indeed in the year 2575 Easter will run two days ahead of the mean opposition. But if you should contend that Easter must be celebrated after the fifteenth Moon, lest it fall on the full moon (for which, however, you can produce no authority who sees anything in this matter), you will not be able to avoid displaying Easter as celebrated on the full moon in the years 1734, 1802, 2238, 2519, 3033, 3138, 3209. And this same thing will happen even if Easter is celebrated after the fourteenth Moon (as reason requires), because in these years the Dominical letter follows the fourteenth Moon by two days, at the full moon itself. But with us this is no sin, since we know that by the Canons Easter can be celebrated on the full moon; whereas with you it is, since you deny that it ought to be done. Moreover, in those eight earlier years — 1737, 1791, 1859, 1957, 2575, 2995, 3195, 3266 — unless you decree that Easter is to be celebrated on the fifteenth Moon, as the Canons and the decrees of the Fathers prescribe, you will defer it to the twenty-second Moon [Lunam xxij], against all the writers on computus, the Councils, and the Canons.

BUT here, look, are another 80 years for you, in which greater errors are committed, seeing that in them your fourteenth Moons anticipate ours by three days, and sometimes even four.

Comparison table of a further 80 years — Gregorian versus Scaligerian reckoning (folio 546)

Columns as in the folio-545 table. Here the mean full moons are headed "**Plenilunia media secundum intercalationem**" (Gregorian / Scaligerian) — i.e. the mean full moons according to the [respective] intercalation.

| Anni
Domini | A
ur
. | Ep.
G | Ep.
S | L1
4 G | L1
4 S | Plen.
G | Plen. S | L.D.
G | L.D.
S | D.ex.
G | D.ex.
S |
|----------------|--------------|----------|----------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| 1927 | 9 | 27 | 29 | 16
A | 13
A | 16·8 A | 15·8 A | B | A | 13 | 12 |
| 1946 | 9 | 27 | 29 | 16
A | 13
A | 16·1 A | 15·1 A | F | E | 13 | 12 |
| 1965 | 9 | 27 | 29 | 16
A | 13
A | 15·18
A | 14·18
A | C | B | 13 | 12 |
| 2231 | 9 | 26 | 28 | 17 | 14 | 17·9 A | 16·9 A | B | A | 15 | 14 |

| Anni Domini | A
ur
. | Ep.
G | Ep.
S | L1
4 G | L1
4 S | Plen.
G | Plen. S | L.D.
G | L.D.
S | D.ex.
G | D.ex.
S |
|-------------|--------------|----------|----------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| | | | | A | A | | | | | | |
| 2250 | 9 | 26 | 28 | 17
A | 14
A | 17·2 A | 16·2 A | F | E | 15 | 14 |
| 2546 | 1 | 27 | 29 | 16
A | 13
A | 16·14
A | 16·14
A | B | B | 17 | 17 |
| 2565 | 1 | 27 | 29 | 16
A | 13
A | 6·7 A | 16·7 A | F | F | 17 | 17 |
| 2601 | 18 | 3 | 6 | 10
A | 7 A | 9·9 A | 8·9 A | D | C | 18 | 17 |
| 2602 | 19 | 14 | 17 | 30
M | 27
M | 29·18
M | 28·18
M | C | B | 18 | 17 |
| 2603 | 1 | 26 | 29 | 17
A | 13
A | 17·16
A | 16·16
A | B | A | 18 | 17 |
| 2605 | 3 | 18 | 21 | 26
M | 23
M | 26·9 M | 25·9 M | F | E | 18 | 17 |
| 2606 | 4 | 29 | 2 | 14
A | 11
A | 14·7 A | 13·7 A | E | D | 18 | 17 |
| 2607 | 5 | 10 | 13 | 3 A | 31
M | 3·16 A | 2·16 A | D | C | 18 | 17 |
| 2609 | 7 | 2 | 5 | 11
A | 8 A | 10·22
A | 9·22 A | A | G | 18 | 17 |
| 2610 | 8 | 13 | 16 | 31
M | 28
M | 31·7 M | 30·7 M | G | F | 18 | 17 |
| 2611 | 9 | 24 | 27 | 18
A | 15
A | 19·4 A | 18·4 A | F | E | 18 | 17 |
| 2613 | 11 | 16 | 19 | 28
M | 25
M | 27·22
M | 26·22
M | C | B | 18 | 17 |
| 2614 | 12 | 27 | 0 | 16
A | 13
A | 15·19
A | 14·19
A | B | A | 18 | 17 |
| 2615 | 13 | 8 | 11 | 5 A | 2 A | 5·4 A | 4·4 A | A | G | 18 | 17 |
| 2617 | 15 | * | 3 | 13
A | 10
A | 12·11
A | 11·11
A | E | D | 18 | 17 |

| Anni Domini | A
ur
. | Ep.
G | Ep.
S | L1
4 G | L1
4 S | Plen.
G | Plen. S | L.D.
G | L.D.
S | D.ex.
G | D.ex.
S |
|-------------|--------------|----------|----------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| 2618 | 16 | 11 | 14 | 2 A | 30
M | 1·19 A | 31·19
M | D | C | 18 | 17 |
| 2619 | 17 | 22 | 25 | 22
M | 19
M | 22·4 M | 21·4 M | C | B | 18 | 17 |
| 2621 | 19 | 14 | 17 | 30
M | 27
M | 29·11
M | 28·11
M | G | F | 18 | 17 |
| 2622 | 1 | 26 | 29 | 17
A | 13
A | 17·8 A | 16·8 A | F | E | 18 | 17 |

The demonstration table refuting Scaliger continues (the argument that Scaliger's 14th moons run two to four days early). This leaf carries a further comparison table; the discussion of it follows on the next leaf.

Comparison table of Anni Domini with the Gregorian and Scaligerian epacts, 14th moons, mean full moons, Dominical letters, and days removed (folio 547).

[Table continues from the previous leaf.] The two epact columns — and the columns that depend on them — diverge deliberately: throughout this leaf the Scaligerian epacts run three units higher than the Gregorian (or two units in the later, larger-year block), so the Scaligerian 14th moons and full moons fall earlier. Transcribed as printed; not harmonized. In the epact columns, Gregorian epact 30 is set as an asterisk * (the new-Calendar sort) and Scaligerian epact 30 as ø (Scaliger's sort) — two distinct forms, both preserved.

| Anni Domini | A
u
r.
N
u
m
. | E
p.
G
r
e
g.
g. | Ep
.
Sc
ali
g.
g. | Lu
na
14
Gre
g.
g. | Lun
a 14
Scali
g.
g. | Plenil
un.
med.
Greg. | Plenilu
n. med.
Scalig. | Lit.
Do
m.
Gre
g. | Lit.
Dom.
Scali
g. | Dies
exem
pti
Greg. | Dies
exemp
ti
Scalig. |
|-------------|----------------------------------|------------------------------------|----------------------------------|-----------------------------------|----------------------------------|--------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|
| 2629 | 8 | 1 | 16 | 31 | 28 | 30. 23 | 29. 23 | D | C | 18 | 17 |
| | | 3 | | M | M | M | M | | | | |
| 2630 | 9 | 2 | 27 | 18 | 15 A | 18. 21 | 17. 21 | C | B | 18 | 17 |
| | | 4 | | A | | A | A | | | | |

| Anni
Domi
ni | A
u
r.
N
u
m
. | E
p.
G
r
e
g. | Ep
. Sc
ali
g. | Lu
na
14
Gre
g. | Lun
a 14
Scali
g. | Plenil
un.
med.
Greg. | Plenilu
n. med.
Scalig. | Lit.
Do
m.
Gre
g. | Lit.
Dom.
Scali
g. | Dies
exem
pti
Greg. | Dies
exemp
ti
Scalig. |
|------------------------------|----------------------------------|------------------------------|-------------------------|-----------------------------|----------------------------|--------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|
| 2631 | 1
0 | 5 | 8 | 8 A | 5 A | 8. 6 A | 7. 6 A | B | A | 18 | 17 |
| 2633 | 1
2 | 2
7 | 0 | 16
A | 13 A | 15. 12
A | 14. 12
A | F | E | 18 | 17 |
| 2634 | 1
3 | 8 | 11 | 5 A | 2 A | 4. 21 A | 3. 21 A | E | D | 18 | 17 |
| 2635 | 1
4 | 1
9 | 22 | 25
M | 22
M | 25. 6
M | 24. 6 M | D | C | 18 | 17 |
| 2637 | 1
6 | 1
1 | 14 | 2 A | 30
M | 1. 12 A | 31. 12
M | A | G | 18 | 17 |
| 2638 | 1
7 | 2
2 | 25 | 22
M | 19
M | 21. 21
M | 20. 21
M | G | F | 18 | 17 |
| 2639 | 1
8 | 3 | 6 | 10
A | 7 A | 9. 18 A | 8. 18 A | F | E | 18 | 17 |
| 2641 | 1
6 | 2 | 29 | 17
A | 13 A | 17. 0 A | 16. 0 A | C | B | 18 | 17 |
| 2742
[recte
:
2642] | 2 | 7 | 10 | 6 A | 3 A | 6. 10 A | 5. 10 A | B | A | 38
[recte
: 18] | 17 |
| 2643 | 3 | 1
8 | 21 | 26
M | 23
M | 26. 18
M | 25. 18
M | A | G | 18 | 17 |
| 2645 | 5 | 1
0 | 13 | 3 A | 31
M | 3. 1 A | 2. 1 A | E | D | 18 | 17 |
| 2646 | 6 | 2
1 | 24 | 23
M | 20
M | 23. 9
M | 22. 9 M | D | C | 18 | 17 |
| 2647 | 7 | 2 | 5 | 11
A | 8 A | 11. 7 A | 10. 7 A | C | B | 18 | 17 |
| 2649 | 9 | 2 | 27 | 18 | 15 A | 18. 13 | 17. 13 | G | F | 18 | 17 |

| Anni
Domi
ni | A
u
r.
N
u
m
. | E
p.
G
r
e
g. | Ep
. Sc
ali
g. | Lu
na
14
Gre
g. | Lun
a 14
Scali
g. | Plenil
un.
med.
Greg. | Plenilu
n. med.
Scalig. | Lit.
Do
m.
Gre
g. | Lit.
Dom.
Scali
g. | Dies
exem
pti
Greg. | Dies
exemp
ti
Scalig. |
|--------------------|----------------------------------|------------------------------|-------------------------|-----------------------------|----------------------------|--------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|
| | | 4 | | A | | A | A | | | | |
| 2650 | 1
0 | 5 | 8 | 8 A | 5 A | 7. 22 A | 6. 22 A | F | E | 18 | 17 |
| 2651 | 1
1 | 1
6 | 19 | 28
M | 25
M | 28. 7
M | 27. 7 M | E | D | 18 | 17 |
| 2653 | 1
3 | 8 | 11 | 5 A | 2 A | 4. 13 A | 3. 13 A | B | A | 18 | 17 |
| 2654 | 1
4 | 1
9 | 22 | 25
M | 22
M | 24. 22
M | 23. 22
M | A | G | 18 | 17 |
| 2655 | 1
5 | * | 3 | 13
A | 10 A | 12. 20
A | 11. 20
A | G | F | 18 | 17 |
| 2658 | 1
8 | 3 | 6 | 10
A | 7 A | 9. 11 A | 8. 11 A | C | B | 18 | 17 |
| 2659 | 1
9 | 1
4 | 17 | 30
M | 27
M | 29. 20
M | 28. 20
M | B | A | 18 | 17 |
| 2661 | 2 | 7 | 10 | 6 A | 3 A | 6. 2 A | 5. 2 A | F | E | 18 | 17 |
| 2662 | 3 | 1
8 | 21 | 26
M | 23
M | 26. 11
M | 25. 11
M | E | D | 18 | 17 |
| 2663 | 4 | 2
9 | 2 | 14
A | 11 A | 14. 8 A | 13. 8 A | D | C | 18 | 17 |
| 2665 | 6 | 2
1 | 24 | 23
M | 20
M | 23. 2
M | 22. 2 M | A | G | 18 | 17 |
| 2666 | 7 | 2 | 5 | 11
A | 8 A | 11. 0 A | 10. 0 A | G | F | 18 | 17 |
| 2667 | 8 | 1
3 | 16 | 31
M | 28
M | 31. 8
M | 30. 8 M | F | E | 18 | 17 |
| 2669 | 1
0 | 5 | 8 | 8 A | 5 A | 7. 15 A | 6. 15 A | C | B | 18 | 17 |
| 2670 | 1 | 1 | 19 | 28 | 25 | 20. 0 A | 27. 0 M | B | A | 18 | 17 |

| Anni Domini | A
u
r.
N
u
m
. | E
p.
G
r
e
g. | Ep
. Sc
ali
g. | Lu
na
14
Gre
g. | Lun
a 14
Scali
g. | Plenil
un.
med.
Greg. | Plenilu
n. med.
Scalig. | Lit.
Do
m.
Gre
g. | Lit.
Dom.
Scali
g. | Dies
exem
pti
Greg. | Dies
exemp
ti
Scalig. |
|-------------|----------------------------------|------------------------------|-------------------------|-----------------------------|----------------------------|--------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|
| | 1 | 6 | | M | M | | | | | | |
| 2671 | 1 | 2 | 0 | 16 | 13 A | 15. 21 | 14. 21 | A | G | 18 | 17 |
| | 2 | 7 | | A | | A | A | | | | |
| 2907 | 1 | 2 | 27 | 18 | 15 A | 18. 16 | 17. 16 | B | A | 20 | 19 |
| | | 5 | | A | | A | A | | | | |
| 2918 | 1 | 2 | 28 | 17 | 14 A | 16. 20 | 15. 20 | B | A | 20 | 19 |
| | 2 | 6 | | A | | A | A | | | | |
| 2926 | 1 | 2 | 27 | 18 | 15 A | 18. 9 A | 17. 9 A | F | E | 20 | 19 |
| | | 5 | | A | | | | | | | |
| 2937 | 1 | 2 | 28 | 17 | 14 A | 16. 13 | 15. 13 | F | E | 20 | 19 |
| | 2 | 6 | | A | | A | A | | | | |
| 2945 | 1 | 2 | 27 | 18 | 15 A | 18. 1 A | 18. 1 A | C | C | 20 | 20 |
| | | 5 | | A | | | | | | | |
| 2975 | 1 | 2 | 28 | 17 | 14 A | 16. 22 | 16. 22 | A | A | 20 | 20 |
| | 2 | 6 | | A | | A | A | | | | |
| 2983 | 1 | 2 | 27 | 18 | 15 A | 18. 10 | 18. 10 | E | E | 20 | 20 |
| | | 5 | | A | | A | A | | | | |
| 2994 | 1 | 2 | 28 | 17 | 14 A | 16. 14 | 16. 14 | E | E | 20 | 20 |
| | 2 | 6 | | A | | A | A | | | | |
| 3002 | 1 | 2 | 27 | 18 | 15 A | 17. 3 A | 16. 3 A | C | B | 21 | 20 |
| | | 5 | | A | | | | | | | |
| 3013 | 1 | 2 | 28 | 17 | 14 A | 16. 7 A | 15. 7 A | C | B | 21 | 20 |
| | 2 | 6 | | A | | | | | | | |
| 3021 | 1 | 2 | 27 | 18 | 15 A | 17. 20 | 16. 20 | G | F | 21 | 20 |
| | | 5 | | A | | A | A | | | | |
| 3051 | 1 | 2 | 28 | 17 | 14 A | 16. 16 | 15. 16 | E | D | 21 | 20 |
| | 2 | 6 | | A | | A | A | | | | |
| 3059 | 1 | 2 | 27 | 18 | 15 A | 18. 5 A | 17. 5 A | B | A | 21 | 20 |
| | | 5 | | A | | | | | | | |

| Anni
Domi
ni | A
u
r.
N
u
m
. | E
p.
G
r
e
g. | Ep
. Sc
ali
g. | Lu
na
14
Gre
g. | Lun
a 14
Scali
g. | Plenil
un.
med.
Greg. | Plenilu
n. med.
Scalig. | Lit.
Do
m.
Gre
g. | Lit.
Dom.
Scali
g. | Dies
exem
pti
Greg. | Dies
exemp
ti
Scalig. |
|--------------------|----------------------------------|------------------------------|-------------------------|-----------------------------|----------------------------|--------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|
| 3070 | 1
2 | 2
6 | 28 | 17
A | 14 A | 17. 8 A | 16. 8 A | B | A | 21 | 20 |
| 3214 | 4 | 2
7 | 29 | 16
A | 13 A | 16. 8 A | 16. 8 A | E | E | 22 | 22 |
| 3233 | 4 | 2
7 | 29 | 16
A | 13 A | 16. 1 A | 16. 1 A | B | B | 22 | 22 |
| 3271 | 4 | 2
7 | 29 | 16
A | 13 A | 16. 10
A | 16. 10
A | D | D | 22 | 22 |
| 3290 | 4 | 2
7 | 29 | 16
A | 13 A | 16. 2 A | 16. 2 A | A | A | 22 | 22 |
| 3309 | 4 | 2
7 | 29 | 17
A | 13 A | 15. 19
A | 14. 19
A | F | E | 23 | 22 |
| 4702 | 1
0 | 2
6 | 28 | 17
A | 14 A | 17. 9 A | 16. 9 A | E | D | 34 | 33 |
| 4721 | 1
0 | 2
6 | 28 | 17
A | 14 A | 17. 0 A | 16. 0 A | B | A | 34 | 33 |
| 4759 | 1
0 | 2
6 | 28 | 17
A | 14 A | 17. 9 A | 16. 9 A | D | C | 34 | 33 |
| 4778 | 1
0 | 2
6 | 28 | 17
A | 14 A | 17. 2 A | 16. 2 A | A | G | 34 | 33 |
| 4797 | 1
0 | 2
6 | 28 | 17
A | 14 A | 16. 18
A | 15. 18
A | E | D | 34 | 33 |

(folio 548)

[Margin: That Scaliger's 14th moons frequently fall three, or even four, days before the 14th moon of the Gregorian Calendar.]

In all these years — I pass over a great many others in which the same thing happens, so as not to seem bent on burying you under a mass of examples — your 14th moons consistently run three days ahead of ours, and by nearly as

many days, and sometimes even four (as in the years 2546, 2565, 2603, 2611, 2622, 2945, 2983, 3214, 3233, 3271, 3290), while only rarely do they fall a mere two days before the mean oppositions.

Consequently, if the next day — that is, your fifteenth moon — should fall on a Sunday, then by your epacts and canons and the custom of the Church, Easter will be celebrated one or two days, and sometimes even three, before the mean full moon: which is utterly absurd and unheard of. And if it could not be celebrated on the full moon — as you falsely suppose — but after the fifteenth moon, then, should the day following the fifteenth moon be a Sunday, it would be celebrated either on the full moon itself (which you do not allow) or one day, or even two, before the full moon, against the canons. You see, then, how wrongly your epacts have been placed in the Calendar — with epact 29 shifted from the first of April to the 31st of March, and so forth — and how falsely your table of the true period supplies those same epacts. You see this whole structure of yours undermined and collapsing of its own accord.

[Margin: That Scaliger not infrequently has Easter kept before the full moon, or even two days before it.]

Nor does the matter rest here. Your epacts not only fail of themselves to give us a legitimate Easter, but very often actually force upon us a celebration contrary to the canons and the decrees of the Fathers. For if Easter is to be celebrated after the 14th moon of the cycle — as is right and as the canons prescribe — then in the year 2565 it will be kept three days before the mean opposition; in the year 2650, one day; and likewise in the year 2670; while in the years 2606, 2907, 3059, 4778, two days. What could be more inept? But if, as you falsely think, Easter had to be celebrated after the fifteenth moon, then in those same years it would be deferred to the 22nd moon of the cycle, which the canons forbid. Again, in the years 2231, 2603, 2630, 2643, 2647, 2667, 2945, 2975, 3002, 3290, Easter will anticipate the mean opposition by one day and will be kept after the 15th moon of the cycle; while in the years 2610, 2613, 2617, 2637, 2661, 2671, 2918, 3070, 4721, it will be celebrated on the full moon itself — which nevertheless you shudder at without cause.

Furthermore — see where I am going — in the year 2619, in which your epact is 25, there will be no legitimate Easter at all. Why so? Because this epact is not Paschal in March, since it occupies the 6th day of March, but in April, setting its 14th moon on the 17th of April. Since, then, by your equation the mean opposition falls on the 19th of April at hour 17 — that is, on the 20th day — it will not be Paschal, because it follows the 19th; rather the opposition of March, falling

on the 21st day at hour 4 — that is, on the 22nd day — will be Paschal. Scaliger will therefore be compelled that year to celebrate Easter in the second month, and wrongly at that, since his 14th moon, falling on the 17th of April, runs three days ahead of the opposition. This is faulty, because by its own nature Easter, kept after the 14th moon, could be celebrated on the 18th, if that were a Sunday — two days before the full moon; or (as his opinion holds) after the 15th moon, on the 19th, if it were a Sunday — one day before the full moon.

How much more correctly, then, does our epact 22 that year — setting its 14th moon on the 22nd of March — present Easter in the first month, seeing that the opposition of March, by our equation, falls on the 22nd of March at hour 4, plainly after the equinox? What could be more correct than this? Nor will this error dog your table only once. For exactly the same thing will happen in the year 2638. Again your epact will be 25, whose Paschal 14th moon holds the 17th of April; and yet the opposition of April, falling on the 19th day at hour 10, is not suitable, since it must be assigned to the 20th day, after the 19th — and your 14th moon precedes it by three days. How much better, then, that our epact 22 for that year places the 14th moon on the 22nd of March, after the equinox, and so looks to the first month?

In the year 2646, however, your epact will be 24, and, as you would have it, Paschal in March; his fifteenth moon will fall on the 21st of March, anticipating the full moon by two days. But our epact that year will be 21, whose 14th moon is marked on the 23rd of March — one day before the full moon — which for us falls on the 23rd day at hour 9. What could be more precise? Do you see how much more happily the matter is managed with our epacts and our equation? Nor does your table's error stop here, but creeps further. You set the Paschal epact 24 in March — which is altogether unprecedented, since not one of the writers or of the Fathers has ever enclosed the seventh day of March (to which epact 24 is assigned) within the bounds of the Paschal new moons that are traced out through the numbers of the cycle. How much more correctly does our table replace that same epact in April? Let us consider, if you please, the following 16 years, in which each of us employs epact 24.

Table of the 16 years in which each party assigns epact 24 (folio 548). The Gregorian and Scaligerian columns diverge as printed; not harmonized.

| An
ni
Do
mi
ni | Au
r.
nu
me
r. | Ep.
Cal.
Gre. | Ep.
Sca
lig. | Lun
a 14
Gre
g. | Lun
a 14
Scali
. | Dies
exempti
sec. æqu.
Gre. | Dies
exempti
sec. æqu.
Scal. | Plenilun.
media
Pasch.
sec.
intercal.
Gre. | Plenilun.
media
Pasch.
sec.
intercal.
Scal. |
|----------------------------|----------------------------|--------------------------|--------------------|--------------------------|---------------------------|--------------------------------------|---------------------------------------|---|--|
| 16
09 | 14 | 24 | 24 | 18 A | 20
M | 10 | 10 | 18. 13 A | 20. 0 M |
| 16
28 | 14 | 24 | 24 | 18 A | 20
M | 10 | 10 | 18. 6 A | 19. 17 M |
| 16
47 | 14 | 24 | 24 | 18 A | 20
M | 10 | 10 | 18. 22 A | 20. 10 M |
| 16
66 | 14 | 24 | 24 | 18 A | 20
M | 10 | 10 | 18. 15 A | 20. 2 M |
| 16
85 | 14 | 24 | 24 | 18 A | 20
M | 10 | 10 | 18. 7 A | 19. 19 M |
| 22
77 | 17 | 24 | 24 | 18 A | 20
M | 15 | 15 | 18. 7 A | 19. 19 M |
| 22
96 | 17 | 24 | 24 | 18 A | 20
M | 15 | 15 | 18. 0 A | 19. 11 M |
| 24
29 | 17 | 24 | 24 | 18 A | 20
M | 16 | 16 | 18. 20 A | 20. 7 M |
| 24
48 | 17 | 24 | 24 | 18 A | 20
M | 16 | 16 | 18. 12 A | 19. 23 M |
| 24
86 | 17 | 22
[rect
e:
24] | 24 | 18 A | 20
M | 16 | 16 | 18. 21 A | 20. 8 M |
| 34
88 | 12 | 24 | 24 | 18 A | 20
M | 24 | 24 | 18. 12 A | 20. 0 M |
| 41
56 | 15 | 24 | 24 | 18 A | 20
M | 29 | 29 | 18. 6 A | 19. 18 M |
| 41
75 | 15 | 24 | 24 | 18 A | 20
M | 29 | 29 | 18. 23 A | 20. 10 M |
| 41
94 | 15 | 24 | 24 | 18 A | 20
M | 29 | 29 | 18. 16 A | 20. 3 M |

| An
ni | Au
r. | | | Lun
a 14 | Lun
a 14 | Dies
exempti
sec. æqu. | Dies
exempti
sec. æqu. | Plenilun.
media
Pasch.
sec.
intercal.
Gre. | Plenilun.
media
Pasch.
sec.
intercal.
Scal. |
|----------------|----------------|---------------------|--------------------|-------------|-------------|------------------------------|------------------------------|---|--|
| Do
mi
ni | nu
me
r. | Ep.
Cal.
Gre. | Ep.
Sca
lig. | Gre
g. | Scali
. | | | | |
| 45 | 7 | 24 | 24 | 18 A | 20 | 32 | 32 | 18. 22 A | 20. 9 M |
| 66 | | | | | M | | | | |
| 45 | 7 | 24 | 24 | 18 A | 20 | 32 | 32 | 18. 14 A | 20. 1 M |
| 85 | | | | | M | | | | |

(folio 549)

[Margin: That Scaliger frequently celebrates Easter in the last month of the preceding year.]

Do you not see that you keep Easter in the twelfth month, while we keep it in the first? For your full moons in March all precede the 22nd of March, and so your true 14th moons fall before the day of the equinox; whereas ours, in April, do not go beyond the 19th of April, and so our true 14th moons do not pass the 18th. Now it is agreed among the writers on the computus that the Paschal full moons are contained within one of the 29 days reckoned from March 22 to April 19 inclusive. From which it follows that those which precede March 22 belong to the last month, and those which pass beyond April 19 belong to the second month. Do you see, then, most learned Scaliger, how great a thicket of errors of the Paschal new moons springs up, in this table of ours, out of your epacts and that new Canon of yours?

[Margin: That Scaliger's 14th moons are too often postponed in the Calendar.]

In the tables above, the 14th moons of the Scaligerian method always run ahead of the 14th moons of the Gregorian Calendar by two or three days, sometimes even four. Let us now see, if you please, most learned Scaliger, whether your table, in the true tropical period, ever offers us 14th moons *later* than the Gregorian ones. For if this should happen, your equation will be found to be faulty and false in every respect. Let us therefore consider the following 58 years, in which the Scaligerian epacts are smaller by two than the Gregorian, and accordingly mark the new moons and the 14th moons two days later in the Calendar — except when the epact is one of these five, 25, 26, 27, 28, 29, for these show them only one day later, since in your Calendar they are advanced upward by one day.

And here, first of all, I am astonished at what could have come into your mind, most learned Scaliger, to thrust the new moons back by a full two days toward the ends of the months, from the year 3609 up to the year 3745, when only a single day was dropped in the year 3608. For, on account of one day removed, the new moons are forced to descend by one day in the Calendar, not by two — unless you wish to say that these same new moons, from the year 2477 to the year 3609, which by two days from...

Table of the 58 years testing whether the Scaligerian 14th moons ever fall later than the Gregorian (folio 549). The mean full moon ("Plenilunia med. iuxta vtriusque intercalat.") is a single column shared by both reckonings; the days removed ("Dies exempti iuxta vtriusque intercalat.") likewise stand at 25 throughout. Columns transcribed as printed, not harmonized.

| Anni Domini | Aure us Num. | Ep. Gre g. | Ep. Scali g. | Luna 14 Greg. | Luna 14 Scali. | Dies exempti (both) | Plenilun. med. (both) | Literæ Domin. |
|-------------|--------------|------------|--------------|---------------|----------------|---------------------|-----------------------|---------------|
| 3609 | 19 | 11 | 9 | 2 A | 4 A | 25 | 2. 7 A | D |
| 3612 | 3 | 15 | 13 | 29 M | 31 M | 25 | 29. 22 M | A G |
| 3613 | 4 | 26 | 24 | 17 A | 20 M | 25 | 17. 19 A | F |
| 3616 | 7 | 29 | 27 | 14 A | 15 A | 25 | 14. 11 A | C B |
| 3617 | 8 | 10 | 8 | 3 A | 5 A | 25 | 3. 19 A | A |
| 3620 | 11 | 13 | 11 | 31 M | 2 A | 25 | 31. 11 M | E D |
| 3621 | 12 | 24 | 22 | 18 A | 2 M | 25 | 12. 8 A | C |
| 3622 | 13 | 5 | 3 | 8 A | 10 A | 25 | 8. 17 A | B |
| 3624 | 15 | 27 | 25 | 16 A | 17 A | 25 | 15. 23 A | G F |
| 3625 | 16 | 8 | 6 | 5 A | 7 A | 25 | 5. 8 A | E |
| 3626 | 17 | 19 | 17 | 25 M | 27 M | 25 | 25. 17 A | D |
| 3628 | 19 | 11 | 9 | 2 A | 4 A | 25 | 1. 23 A | B A |
| 3632 | 4 | 26 | 24 | 17 A | 20 M | 25 | 17. 12 A | D C |
| 3633 | 5 | 7 | 5 | 6 A | 8 A | 25 | 6. 21 A | B |
| 3636 | 8 | 10 | 8 | 3 A | 5 A | 25 | 3. 12 A | F E |
| 3637 | 9 | 21 | 19 | 23 M | 25 M | 25 | 23. 21 M | D |
| 3638 | 10 | 2 | 0 | 11 A | 13 A | 25 | 11. 18 A | C |
| 3640 | 12 | 24 | 22 | 18 A | 22 M | 25 | 19. 1 A | A G |

| Anni
Domi
ni | Aure
us
Num
. | Ep.
Gre
g. | Ep.
Scali
g. | Luna
14
Greg. | Luna
14
Scali. | Dies
exempti
(both) | Plenilun.
med. (both) | Literæ
Domin. |
|--------------------|------------------------|------------------|--------------------|---------------------|----------------------|---------------------------|--------------------------|------------------|
| 3641 | 13 | 5 | 3 | 8 A | 10 A | 25 | 8. 9 A | F |
| 3642 | 14 | 16 | 14 | 28 M | 30 M | 25 | 28. 18 M | E |
| 3644 | 16 | 8 | 6 | 5 A | 7 A | 25 | 5. 1 A | C B |
| 3645 | 17 | 19 | 17 | 25 M | 27 M | 25 | 25. 9 M | A |
| 3647 | 19 | 11 | 9 | 2 A | 4 A | 25 | 2. 16 A | F |
| 3648 | 1 | 23 | 21 | 21 M | 23 M | 25 | 22. 0 M | E D |
| 3649 | 2 | 4 | 2 | 9 A | 11 A | 25 | 9. 22 A | C |
| 3652 | 5 | 7 | 5 | 6 A | 8 A | 25 | 6. 13 A | G F |
| 3653 | 6 | 18 | 16 | 26 M | 28 M | 25 | 26. 22 M | E |
| 3656 | 9 | 21 | 19 | 23 M | 25 M | 25 | 23. 13 M | B A |
| 3657 | 10 | 2 | 0 | 11 A | 13 A | 25 | 11. 11 A | G |
| 3658 | 11 | 13 | 11 | 31 M | 2 A | 25 | 31. 20 M | F |
| 3660 | 13 | 5 | 3 | 8 A | 10 A | 25 | 8. 2 A | D C |
| 3661 | 14 | 16 | 14 | 28 M | 30 M | 25 | 28. 11 M | B |
| 3663 | 16 | 8 | 6 | 5 A | 7 A | 25 | 5. 17 A | G |
| 3664 | 17 | 19 | 17 | 25 M | 27 M | 25 | 25. 2 M | F E |
| 3666 | 19 | 11 | 9 | 2 A | 4 A | 25 | 2. 8 A | C |
| 3668 | 2 | 4 | 2 | 9 A | 11 A | 25 | 9. 15 A | A G |

[Reverse-test demonstration table: Gregorian vs. Scaligerian Easter reckoning, AD 3669–3699]

In the day columns, **M** = Martius (March) and **A** = Aprilis (April); the *Plenilunia media* column gives day · hour · month. Two-letter Dominical entries mark leap years, single letters common years. The *Epactæ Greg.* / *Epactæ Scalig.* columns and the two *Lunæ xiiij* columns diverge deliberately and are transcribed as printed.

| Anni
Domini | Aur
eus
Nu
m. | Epac
tæ
Greg
. | Epact
æ
Scalig
. | Lunæ
xiiij
Greg. | Lunæ
xiiij
Scali. | Dies
exempti
iuxta
vtriusque
intercalat. | Plenilunia
med. iuxta
vtriusq:
intercalat.
(D·H·mens
.) | Liter
æ
Domi
n. |
|------------------|------------------------|-------------------------|---------------------------|------------------------|-------------------------|--|--|--------------------------|
| 3669 | 3 | 15 | 13 | 29 M | 31 M | 25 | 29·23·M | F |
| 3672 | 6 | 18 | 16 | 26 M | 28 M | 25 | 26·15·M | C B |
| 3674 | 8 | 10 | 8 | 3 A | 5 A | 25 | 3·21·A | G |
| 3676 | 10 | 2 | 0 | 11 A | 13 A | 25 | 11·3·A | E D |
| 3677 | 11 | 13 | 11 | 31 M | 2 A | 25 | 31·12·M | C |
| 4678 | 12 | 24 | 22 | 18 A | 22 M | 25 | 19·10·A | B |
| [recte:
3678] | | | | | | | | |
| 3679 | 13 | 5 | 3 | 8 A | 10 A | 25 | 8·19·A | A |
| 3680 | 14 | 16 | 14 | 28 M | 30 M | 25 | 28·3·M | G F |
| 3682 | 16 | 8 | 6 | 5 A | 7 A | 25 | 5·10·A | D |
| 3683 | 17 | 19 | 17 | 25 M | 27 M | 25 | 25·19·M | C |
| 3684 | 18 | * | 28 | 13 A | 14 A | 25 | 12·16·A | B A |
| 3685 | 19 | 11 | 9 | 2 A | 4 A | 25 | 2·1·A | G |
| 3688 | 3 | 15 | 13 | 29 M | 31 M | 25 | 29·16·M | D C |
| 3690 | 5 | 7 | 5 | 6 A | 8 A | 25 | 6·22·A | A |
| 3692 | 7 | 29 | 27 | 14 A | 15 A | 25 | 14·5·A | F E |
| 3693 | 8 | 10 | 8 | 3 A | 5 A | 25 | 3·14·A | D |
| 3694 | 9 | 21 | 19 | 23 M | 25 M | 25 | 23·23·M | C |
| 3695 | 10 | 2 | 0 | 11 A | 13 A | 25 | 11·20·A | B |
| 3696 | 11 | 13 | 11 | 31 M | 2 A | 25 | 31·5·M | A G |
| 3697 | 12 | 24 | 22 | 18 A | 22 M | 25 | 19·2·A | F |
| 3698 | 13 | 5 | 3 | 8 A | 10 A | 25 | 8·11·A | E |
| 3690 | 14 | 16 | 14 | 28 M | 30 M | 25 | 28·20·M | D |
| [recte:
3699] | | | | | | | | |

Continuing the address to Scaliger:

were being noted earlier by its epacts, to have been false — which I do not think you will maintain, since your own table of the true tropical period would then collapse utterly. Yet even so it seems remarkable to me that, over the next 132 years that follow — that is, from the year 3745 to the year 3877 — you should again drive the same new moons back by two days toward the beginnings of the months. For on account of the one day removed at the year 3744, the new moons ought to descend by a day (if the Moon needs no equation), and certainly not to ascend by two days; or, if the Moon does need an equation, they ought to remain on the same day, as the reckoning of the new moons requires and as we set out more fully in chapters 11 and 12. And if the new moons are correctly noted over these 132 years, it necessarily follows that over the preceding 136 years they were falsely indicated as two days later than the truth. For the rest, I see that you took no account of the equation of the solar and lunar year in placing the new moons, but only of the Jewish new moons [Neomeniæ] — which was the cause of all your troubles, as I have partly shown and shall shortly show further.

Let us therefore examine your fourteenth Moons [Lunæ XIII] — for these must be reckoned with more than the new moons, because of the solemnity of Easter, as you yourself grant — and compare them with the fourteenths of the Gregorian calendar, so that the attentive reader may recognize how much more correctly and aptly the epacts are placed in the Gregorian calendar, and their equation established, than in the Scaligerian. This is what we have done in the preceding table. There it is plainly seen that the fourteenth Moons of the Gregorian calendar always precede the mean oppositions by one day, just as in the earlier tables — and what could be devised more fittingly than this in the matter? But the fourteenth Moons of Scaliger nearly always follow the mean oppositions by two days; and what could be more foreign to the correct celebration of Easter than that? Hence it comes about that, for all the years of the adjoining table, Easter is kept by the Gregorian calendar's prescription rightly and lawfully — namely on the Sunday next after Moon 14, as the canons prescribe — but by Scaliger's method it usually falls in the fourth week, that is on Moon 22, 23, or 24, which the canons in no way allow.

For example: in the year 3609 the Gregorian calendar sets Easter on 5 April, the Sunday next after Moon 14. But the Scaligerian pushes Easter off to 12 April — that is, to the Sunday next after its Moon 15, and hence onto Moon 24 and even beyond; since Moon 15, or the opposition, falls on about the 3rd. Likewise in the year 3612 the Gregorian Easter will fall on the first day of April, but the Scaligerian on 8 April, Moon 24. And the same must be said of very many other years of the same table.

Next, in the years 3613, 3621, 3632, 3640, 3678, and 3697, by the Scaligerian method Easter will be celebrated in the last month, since in those years the mean full moon falls not after the equinox but almost always before it, as the table set out below shows. This surely cannot be excused from being reckoned a most serious error.

[Demonstration table: Scaligerian Easter falling in the last month, AD 3613–3697]

M = Martius (March); *Plenilunia media* sub-columns are **D. H. Mens.** (day · hour · month).

| Anni
Domi
ni | Aur.
Nu
m. | Epact.
Scalig. | Lunæ xiiij
Scali. | Plenilunia
media
(D·H·mens.) | Pascha
Scaligeri post
eius Lunam xv. | Literæ
Domin. |
|--------------------|------------------|-------------------|----------------------|------------------------------------|--|------------------|
| 3613 | 4 | 24 | 20 M | 19·7·M | 24 M | F |
| 3621 | 12 | 22 | 22 M | 20·19·M | 28 M | C |
| 3632 | 4 | 24 | 20 M | 18·7·M | 28 M | D C |
| 3640 | 12 | 22 | 22 M | 20·12·M | 25 M | A G |
| 3678 | 12 | 22 | 22 M | 20·21·M | 27 M | B |
| 3697 | 12 | 22 | 22 M | 20·14·M | 24 M | F |

But perhaps you will say: What? Does your method avoid every error? I admit that in the years 3621, 3678, and 3697 the mean oppositions of April, by our own rule of intercalation, fall on the 19th a little after midday, as is clear from the table above, so that they seem to belong to the second month rather than the first. Nevertheless, since the mean oppositions in the month of March precede the equinox, and therefore cannot belong to the first month, it is more correct to take as the paschal oppositions, in the Gregorian calendar, those that occur in the month of April — because it is a lesser fault to celebrate Easter in the second month than in the last, since the latter is expressly forbidden while the former is permitted. And this error (if it is to be called an error, being one that cannot be avoided) does not arise from any defect of the cycle, but because in the said years no mean opposition falls on any of the 29 days from 22 March inclusive to 19 April inclusive, which alone are assigned to the paschal full moons; so that neither the March opposition nor the April one turns out to be paschal, but the former belongs to the last month and the latter to the second. Since, then, one of the two must be taken if we wish to celebrate Easter in those years, it is better — as we said — to choose the opposition in April rather than the one in March. You

see, then, most learned Scaliger, that your celebrated method of the Jewish new moons is not free of fault. But if this does not move you to hate it, you may love it without a rival.

Three things, from all that has been said throughout this whole book, and especially in this chapter 27 and in chapter 24, I judge to be plainly established. [Margin: What is to be concluded from the things said against Scaliger and Viète.] First, that Scaliger — which in so ingenious a man is exceedingly strange — brought forward nothing at all new in that restoration of his calendar which we had not long before provided for in the assembly on the reform of the calendar, and nothing, in short, which we did not reject for the most just reasons. Next, that the calendar both as proposed by Scaliger, together with his table of equation over the true tropical period, and as constructed by François Viète [Francisco Vieta], contains not one fault but many, and those not slight. Lastly, that the Gregorian calendar is wrongly censured by Scaliger, Viète, and others: since in it the equation of the solar year as well as of the lunar, together with the distribution of the epacts, is so established that everything corresponds beautifully to the mean motions — which is not seen in the calendars of Scaliger and Viète. The tables above make this clear, in which the mean paschal oppositions have been computed for many thousands of years; and these agree wonderfully with the fourteenth Moons of the Gregorian calendar, but differ in many ways from those that the calendars of Scaliger and Viète present — because their fourteenths either precede or follow the mean oppositions by too much, whereas our fourteenths nearly always precede the mean full moons by one day, which agrees remarkably with the canons and the writers on computus. There is no reason, then, why Scaliger and Viète should boast so greatly of their calendars and set them before the whole Christian world as though a kind of divine rule and a heavenly gift. Yet meanwhile we both give and owe great thanks to each of them, because their censures gave us occasion to illustrate the Gregorian calendar by the astronomical computation of very many years. From this it will come about that all may understand that everything in it is rightly arranged, and that in nothing (so far as the nature of the cycle allows) does it depart from what the councils, the Fathers, the canons, and the writers on computus have decreed. Moreover, these so careful attacks of Scaliger and Viète — men likewise most acute and most learned — give us great hope that no one hereafter will weaken the Gregorian calendar in any part, or bring forward anything better; since men of such stature could not, who almost alone of all seemed able to.

CAPUT XXVIII.

On the calculation of lunations as far as fourths [De calculo lunationum usque ad quarta].

Although, for the present business of the calendar, it is enough to proceed in the calculation of lunations as far as seconds — which we have hitherto done in the threefold calculation — nevertheless, so as not to seem to fail the studious in this matter, I have thought it well to extend that same threefold calculation, in this chapter, as far as fourths, so that new and full moons may be computed more accurately whenever it shall seem good. There is also this further advantage: that anyone may examine the epacts, or the numbers of the tables, to see whether they proceed correctly by continual addition, and whether in the tables above one second was always added to the seconds whenever the thirds are more than 30 — as we testified above that we had observed.

EPACTÆ ANNORUM EXPANSORUM. [Epacts of expanded years.] Cap. XIII.

Column heads: **D.** (Dies) · **H.** (Horæ) · **M.** (Minuta) · **S.** (Secunda) · **T.** (Tertia) · **Q.** (Quarta). On the page the table is set as two side-by-side panels (expanded years 1–50 at left, 51–100 at right); it is transcribed here as one continuous table.

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 1 | 10 | 15 | 11 | 21 | 52 | 24 |
| 2 | 21 | 6 | 22 | 43 | 44 | 48 |
| 3 | 2 | 8 | 50 | 2 | 26 | 24 |
| 4 | 14 | 0 | 1 | 24 | 18 | 48 |
| 5 | 24 | 15 | 12 | 46 | 11 | 12 |
| 6 | 5 | 17 | 40 | 4 | 52 | 48 |
| 7 | 16 | 8 | 51 | 26 | 45 | 12 |
| 8 | 28 | 0 | 2 | 48 | 37 | 36 |
| 9 | 9 | 2 | 30 | 7 | 19 | 12 |
| 10 | 19 | 17 | 41 | 29 | 11 | 36 |
| 11 | 0 | 20 | 8 | 47 | 53 | 12 |

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 12 | 12 | 11 | 20 | 9 | 45 | 36 |
| 13 | 23 | 2 | 31 | 31 | 38 | 0 |
| 14 | 4 | 4 | 58 | 50 | 19 | 36 |
| 15 | 14 | 20 | 10 | 12 | 12 | 0 |
| 16 | 26 | 11 | 21 | 34 | 4 | 24 |
| 17 | 7 | 13 | 48 | 52 | 46 | 0 |
| 18 | 18 | 5 | 0 | 14 | 38 | 24 |
| 19 | 28 | 20 | 11 | 36 | 30 | 48 |
| 20 | 10 | 22 | 38 | 55 | 12 | 24 |
| 21 | 21 | 13 | 50 | 17 | 4 | 48 |
| 22 | 2 | 16 | 17 | 35 | 46 | 24 |
| 23 | 13 | 7 | 28 | 57 | 38 | 48 |
| 24 | 24 | 22 | 40 | 19 | 31 | 12 |
| 25 | 6 | 1 | 7 | 38 | 12 | 48 |
| 26 | 16 | 16 | 19 | 0 | 5 | 12 |
| 27 | 27 | 7 | 30 | 21 | 57 | 36 |
| 28 | 9 | 9 | 57 | 40 | 39 | 12 |
| 29 | 20 | 1 | 9 | 2 | 31 | 36 |
| 30 | 1 | 3 | 36 | 21 | 13 | 12 |
| 31 | 11 | 18 | 47 | 43 | 5 | 36 |
| 32 | 23 | 9 | 59 | 4 | 58 | 0 |
| 33 | 4 | 12 | 26 | 23 | 39 | 36 |
| 34 | 15 | 3 | 37 | 45 | 32 | 0 |
| 35 | 25 | 18 | 49 | 7 | 24 | 24 |
| 36 | 7 | 21 | 16 | 26 | 6 | 0 |
| 37 | 18 | 12 | 27 | 47 | 58 | 24 |
| 38 | 29 | 3 | 39 | 9 | 50 | 48 |
| 39 | 10 | 6 | 6 | 28 | 32 | 24 |
| 40 | 21 | 21 | 17 | 50 | 24 | 48 |
| 41 | 2 | 23 | 45 | 9 | 6 | 24 |
| 42 | 13 | 14 | 56 | 30 | 58 | 48 |

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 43 | 24 | 6 | 7 | 52 | 51 | 12 |
| 44 | 6 | 8 | 35 | 11 | 32 | 48 |
| 45 | 16 | 23 | 46 | 33 | 25 | 12 |
| 46 | 27 | 14 | 57 | 55 | 17 | 36 |
| 47 | 8 | 17 | 25 | 13 | 59 | 12 |
| 48 | 20 | 8 | 36 | 35 | 51 | 36 |
| 49 | 1 | 11 | 3 | 54 | 33 | 12 |
| 50 | 12 | 2 | 15 | 16 | 25 | 36 |
| 51 | 22 | 17 | 26 | 38 | 18 | 0 |
| 52 | 4 | 19 | 53 | 56 | 59 | 36 |
| 53 | 15 | 11 | 5 | 18 | 52 | 0 |
| 54 | 26 | 2 | 16 | 40 | 44 | 24 |
| 55 | 7 | 4 | 43 | 59 | 26 | 0 |
| 56 | 18 | 19 | 55 | 21 | 18 | 24 |
| 57 | 29 | 11 | 6 | 43 | 10 | 48 |
| 58 | 10 | 13 | 34 | 1 | 52 | 24 |
| 59 | 21 | 4 | 45 | 23 | 44 | 48 |
| 60 | 3 | 7 | 12 | 42 | 26 | 24 |
| 61 | 13 | 22 | 24 | 4 | 18 | 48 |
| 62 | 24 | 13 | 35 | 26 | 11 | 12 |
| 63 | 5 | 16 | 2 | 44 | 52 | 48 |
| 64 | 17 | 7 | 14 | 6 | 45 | 12 |
| 65 | 27 | 22 | 25 | 28 | 37 | 36 |
| 66 | 9 | 0 | 52 | 47 | 19 | 12 |
| 67 | 19 | 16 | 4 | 9 | 11 | 36 |
| 68 | 1 | 18 | 31 | 27 | 53 | 12 |
| 69 | 12 | 9 | 42 | 49 | 45 | 36 |
| 70 | 23 | 0 | 54 | 11 | 38 | 0 |
| 71 | 4 | 3 | 21 | 30 | 19 | 36 |
| 72 | 15 | 18 | 32 | 52 | 12 | 0 |
| 73 | 26 | 9 | 44 | 14 | 4 | 24 |

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 74 | 7 | 12 | 11 | 32 | 46 | 0 |
| 75 | 18 | 3 | 22 | 54 | 38 | 24 |
| 76 | 0 | 5 | 50 | 13 | 20 | 0 |
| 77 | 10 | 21 | 1 | 35 | 12 | 24 |
| 78 | 21 | 12 | 12 | 57 | 4 | 48 |
| 79 | 2 | 14 | 40 | 15 | 46 | 24 |
| 80 | 14 | 5 | 51 | 37 | 38 | 48 |
| 81 | 24 | 21 | 2 | 59 | 31 | 12 |
| 82 | 5 | 23 | 30 | 18 | 12 | 48 |
| 83 | 16 | 14 | 1 | 40 | 5 | 12 |
| 84 | 28 | 5 | 53 | 1 | 57 | 36 |
| 85 | 9 | 8 | 20 | 20 | 39 | 12 |
| 86 | 19 | 23 | 31 | 42 | 31 | 36 |
| 87 | 1 | 1 | 59 | 1 | 13 | 12 |
| 88 | 12 | 17 | 10 | 23 | 5 | 36 |
| 89 | 23 | 8 | 21 | 44 | 58 | 0 |
| 90 | 4 | 10 | 49 | 3 | 39 | 36 |
| 91 | 15 | 2 | 0 | 25 | 32 | 0 |
| 92 | 26 | 17 | 11 | 47 | 24 | 24 |
| 93 | 7 | 19 | 39 | 6 | 6 | 0 |
| 94 | 18 | 10 | 50 | 27 | 58 | 24 |
| 95 | 29 | 2 | 1 | 49 | 50 | 48 |
| 96 | 11 | 4 | 29 | 8 | 32 | 24 |
| 97 | 21 | 19 | 40 | 30 | 24 | 48 |
| 98 | 2 | 22 | 7 | 49 | 6 | 24 |
| 99 | 13 | 13 | 19 | 10 | 58 | 48 |
| 100 | 25 | 4 | 30 | 32 | 51 | 12 |

For the rest, the epact of 100 years here collected is a little smaller than the one that, in the following table of collected years, is assigned to 100 years by approved authors. This is not surprising, because the fifth and sixth minute-fractions [scrupula quinta ac sexta] that are neglected in the epact of a single year make

the epact of 100 years, collected by continual addition, smaller than it should be. Yet this discrepancy, even in the epact of 1,000,000 years or more, scarcely amounts to an error of half an hour; so the difference need cast no scruple upon us in computing the new moons — especially since opinions differ about the magnitude of the lunar month, as we wrote in chapter 8, number 2.

Caput XXVIII — On computing the lunations to the fourth [sexagesimal fraction] (continued)

Complements of the epacts of the expanded years

[*Epactarum annorum expansorum complementa*] — years 1–100 (printed p. 553)

The leaf sets this table in two side-by-side panels: years 1–50 at the left, years 51–100 at the right. The stub column is headed **Anni expansi** ("expanded years"); the value block is headed **EPACTARVM annorum expansorum complementa** over the six sexagesimal sub-columns **D. H. M. S. T. Q.** (days, hours, minutes, seconds, thirds, fourths). It is transcribed here as one continuous table, years 1–100.

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 1 | 18 | 21 | 32 | 41 | 18 | 24 |
| 2 | 8 | 6 | 21 | 19 | 26 | 0 |
| 3 | 27 | 2 | 54 | 0 | 44 | 24 |
| 4 | 15 | 12 | 42 | 38 | 52 | 0 |
| 5 | 4 | 21 | 31 | 16 | 59 | 36 |
| 6 | 23 | 19 | 3 | 58 | 18 | 0 |
| 7 | 13 | 3 | 52 | 36 | 25 | 36 |
| 8 | 1 | 12 | 41 | 14 | 32 | 12 |
| 9 | 20 | 10 | 13 | 55 | 51 | 36 |
| 10 | 9 | 19 | 2 | 33 | 59 | 12 |
| 11 | 28 | 16 | 35 | 15 | 17 | 36 |
| 12 | 17 | 1 | 23 | 53 | 25 | 12 |
| 13 | 6 | 10 | 12 | 31 | 32 | 48 |
| 14 | 25 | 7 | 45 | 12 | 51 | 12 |
| 15 | 14 | 16 | 33 | 50 | 58 | 48 |

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 16 | 3 | 1 | 22 | 29 | 6 | 24 |
| 17 | 21 | 22 | 55 | 10 | 24 | 48 |
| 18 | 11 | 7 | 43 | 48 | 32 | 24 |
| 19 | 0 | 16 | 32 | 26 | 40 | 0 |
| 20 | 18 | 14 | 5 | 7 | 58 | 24 |
| 21 | 7 | 22 | 53 | 46 | 6 | 0 |
| 22 | 26 | 20 | 26 | 27 | 24 | 24 |
| 23 | 16 | 5 | 15 | 5 | 32 | 0 |
| 24 | 4 | 14 | 3 | 43 | 39 | 36 |
| 25 | 23 | 11 | 36 | 24 | 58 | 0 |
| 26 | 12 | 20 | 25 | 3 | 5 | 36 |
| 27 | 2 | 5 | 13 | 41 | 13 | 12 |
| 28 | 20 | 2 | 46 | 22 | 31 | 36 |
| 29 | 9 | 11 | 35 | 0 | 39 | 12 |
| 30 | 28 | 9 | 7 | 41 | 57 | 36 |
| 31 | 17 | 17 | 56 | 20 | 5 | 12 |
| 32 | 6 | 2 | 44 | 58 | 12 | 48 |
| 33 | 25 | 0 | 17 | 39 | 31 | 12 |
| 34 | 14 | 9 | 6 | 17 | 38 | 48 |
| 35 | 3 | 17 | 54 | 55 | 46 | 24 |
| 36 | 21 | 15 | 27 | 37 | 4 | 48 |
| 37 | 11 | 0 | 16 | 15 | 12 | 24 |
| 38 | 0 | 9 | 4 | 53 | 20 | 0 |
| 39 | 19 | 6 | 37 | 34 | 38 | 24 |
| 40 | 7 | 15 | 26 | 12 | 46 | 0 |
| 41 | 26 | 12 | 58 | 54 | 4 | 24 |
| 42 | 15 | 21 | 47 | 32 | 12 | 0 |
| 43 | 5 | 6 | 36 | 10 | 19 | 36 |
| 44 | 23 | 4 | 8 | 51 | 38 | 0 |
| 45 | 12 | 12 | 57 | 29 | 45 | 36 |
| 46 | 1 | 21 | 46 | 7 | 53 | 12 |

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 47 | 20 | 19 | 18 | 49 | 11 | 36 |
| 48 | 9 | 4 | 7 | 27 | 19 | 12 |
| 49 | 28 | 1 | 40 | 8 | 37 | 36 |
| 50 | 17 | 10 | 28 | 46 | 45 | 12 |
| 51 | 6 | 19 | 17 | 24 | 52 | 48 |
| 52 | 24 | 16 | 50 | 6 | 11 | 12 |
| 53 | 14 | 1 | 38 | 44 | 18 | 48 |
| 54 | 3 | 10 | 27 | 22 | 26 | 24 |
| 55 | 22 | 8 | 0 | 3 | 44 | 48 |
| 56 | 10 | 16 | 48 | 41 | 52 | 24 |
| 57 | 0 | 1 | 37 | 20 | 0 | 0 |
| 58 | 18 | 23 | 10 | 1 | 18 | 24 |
| 59 | 8 | 7 | 58 | 39 | 26 | 0 |
| 60 | 26 | 5 | 31 | 20 | 44 | 24 |
| 61 | 15 | 14 | 19 | 58 | 52 | 0 |
| 62 | 4 | 23 | 8 | 36 | 59 | 36 |
| 63 | 23 | 20 | 41 | 18 | 18 | 0 |
| 64 | 12 | 5 | 29 | 56 | 25 | 36 |
| 65 | 1 | 14 | 18 | 34 | 33 | 12 |
| 66 | 20 | 11 | 51 | 15 | 51 | 36 |
| 67 | 9 | 20 | 39 | 53 | 39 | 12 |
| 68 | 27 | 18 | 12 | 35 | 17 | 36 |
| 69 | 17 | 3 | 1 | 13 | 25 | 12 |
| 70 | 6 | 11 | 49 | 51 | 32 | 48 |
| 71 | 25 | 9 | 22 | 32 | 51 | 12 |
| 72 | 13 | 18 | 11 | 10 | 58 | 48 |
| 73 | 3 | 2 | 59 | 49 | 6 | 24 |
| 74 | 22 | 0 | 32 | 30 | 24 | 48 |
| 75 | 11 | 9 | 21 | 8 | 32 | 24 |
| 76 | 29 | 6 | 53 | 49 | 50 | 48 |
| 77 | 18 | 15 | 42 | 27 | 58 | 24 |

| Anni expansi | D. | H. | M. | S. | T. | Q. |
|--------------|----|----|----|----|----|----|
| 78 | 8 | 0 | 31 | 6 | 6 | 0 |
| 79 | 26 | 22 | 3 | 47 | 24 | 24 |
| 80 | 15 | 6 | 52 | 25 | 32 | 0 |
| 81 | 4 | 15 | 41 | 3 | 39 | 36 |
| 82 | 23 | 13 | 13 | 44 | 58 | 0 |
| 83 | 12 | 22 | 2 | 23 | 5 | 36 |
| 84 | 1 | 6 | 51 | 1 | 13 | 12 |
| 85 | 20 | 4 | 23 | 42 | 31 | 36 |
| 86 | 9 | 13 | 12 | 20 | 39 | 12 |
| 87 | 28 | 10 | 45 | 1 | 57 | 36 |
| 88 | 16 | 19 | 33 | 40 | 5 | 12 |
| 89 | 6 | 4 | 22 | 18 | 12 | 48 |
| 90 | 25 | 1 | 54 | 59 | 31 | 12 |
| 91 | 14 | 10 | 43 | 37 | 38 | 48 |
| 92 | 2 | 19 | 32 | 15 | 46 | 24 |
| 93 | 21 | 17 | 4 | 57 | 4 | 48 |
| 94 | 11 | 1 | 53 | 35 | 12 | 24 |
| 95 | 0 | 10 | 42 | 13 | 20 | 0 |
| 96 | 18 | 8 | 14 | 54 | 38 | 24 |
| 97 | 7 | 17 | 3 | 32 | 46 | 0 |
| 98 | 26 | 14 | 36 | 14 | 4 | 24 |
| 99 | 15 | 23 | 24 | 52 | 12 | 0 |
| 100 | 4 | 8 | 13 | 30 | 19 | 36 |

Epacts of the Collected Years [*Epactae Annorum Collectorum*],
of Chapter XIII — first part (printed p. 554)

EPACTÆ ANNORVM COLLECTORVM. Capitis XIII.

Stub column headed **Anni Collecti** ("collected years"); value block headed **EPACTÆ** over the six sub-columns **D. H. M. Sec. Ter. Quar.** (days, hours, minutes, seconds, thirds, fourths).

| Anni Collecti | D. | H. | M. | Sec. | Ter. | Quar. |
|---------------|----|----|----|------|------|-------|
| 100 | 25 | 4 | 30 | 33 | 2 | 16 |
| 200 | 20 | 20 | 17 | 2 | 53 | 44 |
| 300 | 16 | 12 | 3 | 32 | 45 | 12 |
| 400 | 12 | 3 | 50 | 2 | 36 | 40 |
| 500 | 7 | 19 | 36 | 32 | 28 | 8 |
| 600 | 3 | 11 | 23 | 2 | 19 | 36 |
| 700 | 28 | 15 | 53 | 35 | 21 | 52 |
| 800 | 24 | 7 | 40 | 5 | 13 | 20 |
| 900 | 19 | 23 | 26 | 35 | 4 | 48 |
| 1000 | 15 | 15 | 13 | 4 | 56 | 16 |
| 2000 | 1 | 17 | 42 | 6 | 41 | 44 |
| 3000 | 17 | 8 | 55 | 11 | 38 | 0 |
| 4000 | 3 | 11 | 24 | 13 | 23 | 28 |
| 5000 | 19 | 2 | 37 | 18 | 19 | 44 |
| 6000 | 5 | 5 | 6 | 20 | 5 | 12 |
| 7000 | 20 | 20 | 19 | 25 | 1 | 28 |
| 8000 | 6 | 22 | 48 | 26 | 46 | 56 |
| 9000 | 22 | 14 | 1 | 31 | 43 | 12 |
| 10000 | 8 | 16 | 30 | 33 | 28 | 40 |
| 20000 | 17 | 9 | 1 | 6 | 57 | 20 |
| 30000 | 26 | 1 | 31 | 40 | 26 | 0 |
| 40000 | 5 | 5 | 18 | 10 | 43 | 52 |
| 50000 | 13 | 21 | 48 | 44 | 12 | 32 |
| 60000 | 22 | 14 | 19 | 17 | 41 | 12 |
| 70000 | 1 | 18 | 5 | 47 | 59 | 4 |
| 80000 | 10 | 10 | 36 | 21 | 27 | 44 |
| 90000 | 19 | 3 | 6 | 54 | 56 | 24 |
| 100000 | 27 | 19 | 37 | 28 | 25 | 4 |
| 200000 | 26 | 2 | 30 | 53 | 39 | 20 |
| 300000 | 24 | 9 | 24 | 18 | 53 | 36 |
| 400000 | 22 | 16 | 17 | 44 | 7 | 52 |

| Anni Collecti | D. | H. | M. | Sec. | Ter. | Quar. |
|---------------|----|----|----|------|------|-------|
| 500000 | 20 | 23 | 11 | 9 | 22 | 8 |
| 600000 | 19 | 6 | 4 | 34 | 36 | 24 |
| 700000 | 17 | 12 | 57 | 59 | 50 | 40 |
| 800000 | 15 | 19 | 51 | 25 | 4 | 56 |
| 900000 | 14 | 2 | 44 | 50 | 19 | 12 |
| 1000000 | 12 | 9 | 38 | 15 | 33 | 28 |
| 2000000 | 24 | 19 | 16 | 31 | 6 | 56 |
| 3000000 | 7 | 16 | 10 | 43 | 29 | 36 |
| 4000000 | 20 | 1 | 48 | 59 | 3 | 4 |
| 5000000 | 2 | 22 | 43 | 11 | 25 | 44 |
| 6000000 | 15 | 8 | 21 | 26 | 59 | 12 |
| 7000000 | 27 | 17 | 59 | 42 | 32 | 40 |
| 8000000 | 10 | 14 | 53 | 54 | 55 | 20 |
| 9000000 | 23 | 0 | 32 | 10 | 28 | 48 |
| 10000000 | 5 | 21 | 26 | 22 | 51 | 28 |
| 20000000 | 11 | 18 | 52 | 45 | 42 | 56 |
| 30000000 | 17 | 16 | 19 | 8 | 34 | 24 |
| 40000000 | 23 | 13 | 45 | 31 | 25 | 52 |
| 50000000 | 29 | 11 | 11 | 54 | 17 | 20 |
| 60000000 | 5 | 19 | 54 | 13 | 58 | 0 |
| 70000000 | 11 | 17 | 20 | 36 | 49 | 28 |

Epacts of the Collected Years [*Epactae Annorum Collectorum*],
of Chapter XIII — continuation (printed p. 555)

EPACTÆ ANNORVM COLLECTORVM. Capitis XIII.

| Anni Collecti | D. | H. | M. | Sec. | Ter. | Quar. |
|---------------|----|----|----|------|------|-------|
| 80000000 | 17 | 14 | 46 | 59 | 40 | 56 |
| 90000000 | 23 | 12 | 13 | 22 | 32 | 24 |
| 100000000 | 29 | 9 | 39 | 45 | 23 | 52 |
| 200000000 | 29 | 6 | 35 | 27 | 36 | 56 |
| 300000000 | 29 | 3 | 31 | 9 | 50 | 0 |

| Anni Collecti | D. | H. | M. | Sec. | Ter. | Quar. |
|---------------|----|----|----|------|------|-------|
| 400000000 | 29 | 0 | 26 | 52 | 3 | 4 |
| 500000000 | 28 | 21 | 22 | 34 | 16 | 8 |
| 600000000 | 28 | 18 | 18 | 16 | 29 | 12 |
| 700000000 | 28 | 15 | 13 | 58 | 42 | 16 |
| 800000000 | 28 | 12 | 9 | 40 | 55 | 20 |
| 900000000 | 28 | 9 | 5 | 23 | 8 | 24 |
| 1000000000 | 28 | 6 | 1 | 5 | 21 | 28 |

Monthly epacts — common year and bissextile year (printed p. 555)

Two side-by-side tables, each with the stub **Menses** ("months") and the value block **EPACTÆ** over **D. H. M. S. T. Q.**; the left panel is for the common year (*Anni Communis*), the right for the leap year (*Anni Bissextilis*).

EPACTÆ Anni Communis (common year):

| Menses | D. | H. | M. | S. | T. | Q. |
|--------|----|----|----|----|----|----|
| Ian. | 1 | 11 | 15 | 56 | 49 | 12 |
| Febr. | 29 | 11 | 15 | 56 | 49 | 12 |
| Mart. | 1 | 9 | 47 | 50 | 27 | 36 |
| Apr. | 1 | 21 | 3 | 47 | 16 | 48 |
| Mai. | 3 | 8 | 19 | 44 | 6 | 0 |
| Iuni. | 3 | 19 | 35 | 40 | 55 | 12 |
| Iul. | 5 | 6 | 51 | 37 | 44 | 24 |
| Aug. | 6 | 18 | 7 | 34 | 33 | 36 |
| Sept. | 7 | 5 | 23 | 31 | 22 | 48 |
| Octo. | 8 | 16 | 39 | 28 | 12 | 0 |
| Nou. | 9 | 3 | 55 | 25 | 3 | 12 |
| Dec. | 10 | 15 | 11 | 21 | 50 | 24 |

EPACTÆ Anni Bissextilis (leap year):

| Menses | D. | H. | M. | S. | T. | Q. |
|--------|----|----|----|----|----|----|
| Ian. | 1 | 11 | 15 | 56 | 49 | 12 |
| Febr. | 0 | 22 | 31 | 53 | 38 | 24 |

| Menses | D. | H. | M. | S. | T. | Q. |
|--------|----|----|----|----|----|----|
| Mart. | 2 | 9 | 47 | 50 | 27 | 36 |
| Apr. | 2 | 21 | 3 | 47 | 16 | 48 |
| Mai. | 4 | 8 | 19 | 44 | 6 | 0 |
| Iuni. | 4 | 19 | 35 | 40 | 55 | 12 |
| Iulius | 6 | 6 | 51 | 37 | 44 | 24 |
| Aug. | 7 | 18 | 7 | 34 | 33 | 36 |
| Sept. | 8 | 5 | 23 | 31 | 22 | 48 |
| Octo. | 9 | 16 | 39 | 28 | 12 | 0 |
| Nou. | 10 | 3 | 55 | 25 | 3 | 12 |
| Dec. | 11 | 15 | 11 | 21 | 50 | 24 |

[Prose]

Here too the epact of the last month — that is, of a single year — has been collected, and it is two thirds less than what we set down above, from approved authors, in the table of the expanded years. This difference arises from certain small fractions [*scrupuli*] that were left out of account; the matter, however, produces no error of any significance in computing the new moons.

The Radix of Christ, to be added to the computation [*Radix Christi calculo addenda*] (printed p. 555)

| D. | H. | M. | Sec. | Ter. | Quar. |
|----|----|----|------|------|-------|
| 16 | 18 | 12 | 30 | 0 | 6 |

Revolutions of the New Moons and of the Full Moons (printed p. 555)

Two tables set side by side: *Reuolutiones Nouiluniorum* (revolutions of the new moons), with the left-margin label **Coniunctiones** ("conjunctions"), and *Reuolutiones Pleniluniorum* (revolutions of the full moons), with the left-margin label **Oppositiones** ("oppositions"). Each has the sub-columns **D. H. M. S. T. Q.**

Reuolutiones Nouiluniorum [Margin: Coniunctiones]:

| | D. | H. | M. | S. | T. | Q. |
|--|----|----|----|----|----|----|
| | 29 | 12 | 44 | 3 | 10 | 48 |
| | 59 | 1 | 28 | 6 | 21 | 36 |
| | 88 | 14 | 12 | 9 | 32 | 24 |

| D. | H. | M. | S. | T. | Q. |
|-----|----|----|----|----|----|
| 118 | 2 | 56 | 12 | 43 | 12 |
| 147 | 15 | 40 | 15 | 54 | 0 |
| 177 | 4 | 24 | 19 | 4 | 48 |
| 206 | 17 | 8 | 22 | 15 | 36 |
| 236 | 5 | 52 | 25 | 26 | 24 |
| 265 | 18 | 36 | 28 | 37 | 12 |
| 295 | 7 | 20 | 31 | 48 | 0 |
| 324 | 20 | 4 | 34 | 58 | 48 |
| 354 | 8 | 48 | 38 | 9 | 36 |
| 383 | 21 | 32 | 41 | 20 | 24 |

Reuolutiones Pleniluniorum [Margin: Oppositiones]:

| D. | H. | M. | S. | T. | Q. |
|-----|----|----|----|--------|----|
| 14 | 18 | 22 | 1 | 35 | 24 |
| 44 | 7 | 6 | 4 | 46 | 12 |
| 73 | 19 | 50 | 7 | 57 | 0 |
| 103 | 8 | 34 | 11 | 7 | 48 |
| 132 | 21 | 18 | 14 | 18 | 36 |
| 162 | 10 | 2 | 17 | 29 | 24 |
| 191 | 22 | 46 | 20 | 40 | 12 |
| 221 | 11 | 30 | 23 | 51 | 0 |
| 251 | 0 | 14 | 27 | 1 | 48 |
| 280 | 12 | 58 | 30 | 12 | 36 |
| 310 | 1 | 42 | 33 | 23 | 24 |
| 339 | 14 | 26 | 36 | 34 | 12 |
| 369 | 3 | 10 | 39 | 35 [?] | 0 |

Reuolutiones Nouiluniorum maiores.

[Greater Revolutions of the New Moons]

(Folios 556–557. Column headers as printed: **Dies** = Days; **H.** = Hours; **M.** = Minutes; **Sec.** = Seconds; **Ter.** = Thirds; **Quar.** = Fourths. The sexagesimal columns give the

fractional-day remainder of the mean lunation cycle for each accumulated day-count. A seventh ruled column stands blank to the right of Quar. throughout.)

| | H | M | | | |
|-------|---|---|------|------|-------|
| Dies | . | . | Sec. | Ter. | Quar. |
| 767 | 1 | 5 | 22 | 40 | 48 |
| | 9 | | | | |
| 1151 | 1 | 3 | 4 | 1 | 12 |
| | 6 | 8 | | | |
| 1535 | 1 | 1 | 45 | 21 | 36 |
| | 4 | 0 | | | |
| 1919 | 1 | 4 | 26 | 42 | 0 |
| | 1 | 3 | | | |
| 2303 | 9 | 1 | 8 | 2 | 24 |
| | | 6 | | | |
| 2687 | 6 | 4 | 49 | 22 | 48 |
| | | 8 | | | |
| 3071 | 4 | 2 | 30 | 43 | 12 |
| | | 1 | | | |
| 3455 | 1 | 5 | 12 | 3 | 36 |
| | | 4 | | | |
| 3838 | 2 | 2 | 53 | 24 | 0 |
| | 3 | 6 | | | |
| 7677 | 2 | 5 | 46 | 48 | 0 |
| | 2 | 3 | | | |
| 11516 | 2 | 2 | 40 | 12 | 0 |
| | 2 | 0 | | | |
| 15355 | 2 | 4 | 33 | 36 | 0 |
| | 1 | 7 | | | |
| 19194 | 2 | 1 | 27 | 0 | 0 |
| | 1 | 4 | | | |
| 23053 | 2 | 4 | 20 | 24 | 0 |
| | 0 | 1 | | | |
| 26872 | 2 | 8 | 13 | 48 | 0 |
| | 0 | | | | |
| 30711 | 1 | 3 | 7 | 12 | 0 |

| | Dies | H
. | M
. | Sec. | Ter. | Quar. |
|---------|------|--------|--------|------|------|-------|
| | | 9 | 5 | | | |
| 34550 | | 1 | 2 | 0 | 36 | 0 |
| | | 9 | | | | |
| 38389 | | 1 | 2 | 54 | 0 | 0 |
| | | 8 | 8 | | | |
| 76779 | | 1 | 5 | 48 | 0 | 0 |
| | | 2 | 7 | | | |
| 115169 | | 7 | 2 | 42 | 0 | 0 |
| | | | 6 | | | |
| 153559 | | 1 | 5 | 36 | 0 | 0 |
| | | | 5 | | | |
| 191948 | | 2 | 2 | 30 | 0 | 0 |
| | | 0 | 4 | | | |
| 230338 | | 1 | 5 | 24 | 0 | 0 |
| | | 4 | 3 | | | |
| 268728 | | 9 | 2 | 18 | 0 | 0 |
| | | | 2 | | | |
| 307118 | | 3 | 5 | 12 | 0 | 0 |
| | | | 1 | | | |
| 345507 | | 2 | 2 | 6 | 0 | 0 |
| | | 2 | 0 | | | |
| 383897 | | 1 | 4 | 0 | 0 | 0 |
| | | 6 | 9 | | | |
| 767795 | | 9 | 3 | 0 | 0 | 0 |
| | | | 8 | | | |
| 1151693 | | 2 | 2 | 0 | 0 | 0 |
| | | | 7 | | | |
| 1535590 | | 1 | 1 | 0 | 0 | 0 |
| | | 9 | 6 | | | |
| 1919488 | | 1 | 5 | 0 | 0 | 0 |
| | | 2 | | | | |
| 2303386 | | 4 | 5 | 0 | 0 | 0 |
| | | | 4 | | | |

| | Dies | H
. | M
. | Sec. | Ter. | Quar. |
|-----------|------|--------|--------|------|------|-------|
| 2687283 | 2 | 4 | 0 | 0 | 0 | |
| | 1 | 3 | | | | |
| 3071181 | 1 | 3 | 0 | 0 | 0 | |
| | 4 | 2 | | | | |
| 3455079 | 7 | 2 | 0 | 0 | 0 | |
| | | 1 | | | | |
| 3838977 | 0 | 1 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 7677954 | 0 | 2 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 11516931 | 0 | 3 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 15355908 | 0 | 4 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 19194885 | 0 | 5 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 23033862 | 1 | 0 | 0 | 0 | 0 | |
| 26872839 | 1 | 1 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 30711816 | 1 | 2 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 34550793 | 1 | 3 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 38389770 | 1 | 4 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 76779540 | 3 | 2 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 115169310 | 5 | 0 | 0 | 0 | 0 | |
| 153559080 | 6 | 4 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 191948850 | 8 | 2 | 0 | 0 | 0 | |
| | | 0 | | | | |
| 230338620 | 1 | 0 | 0 | 0 | 0 | |

| | Dies | H | M | Sec. | Ter. | Quar. |
|------------------------------|------|---|---|------|------|-------|
| | | . | . | | | |
| | | 0 | | | | |
| 268728390 | | 1 | 4 | 0 | 0 | 0 |
| | | 1 | 0 | | | |
| 387118160 [recte: 307118160] | | 1 | 2 | 0 | 0 | 0 |
| | | 3 | 0 | | | |

(Table continues on folio 557 below.)

Reuolutiones Nouiluniorum maiores *(continued, folio 557):*

| | Dies | H. | M. | Sec. | Ter. | Quar. |
|-------------|------|----|----|------|------|-------|
| 345507930 | 15 | 0 | | 0 | 0 | 0 |
| 383897700 | 16 | 40 | | 0 | 0 | 0 |
| 767795401 | 9 | 20 | | 0 | 0 | 0 |
| 1151693102 | 2 | 0 | | 0 | 0 | 0 |
| 1535590802 | 18 | 40 | | 0 | 0 | 0 |
| 1919488503 | 11 | 20 | | 0 | 0 | 0 |
| 2303386204 | 4 | 0 | | 0 | 0 | 0 |
| 2687283904 | 20 | 40 | | 0 | 0 | 0 |
| 3071181605 | 13 | 20 | | 0 | 0 | 0 |
| 3455079306 | 6 | 0 | | 0 | 0 | 0 |
| 3838977006 | 22 | 40 | | 0 | 0 | 0 |
| 7677954013 | 21 | 20 | | 0 | 0 | 0 |
| 11516931020 | 20 | 0 | | 0 | 0 | 0 |
| 15355908027 | 18 | 40 | | 0 | 0 | 0 |
| 19194885034 | 17 | 20 | | 0 | 0 | 0 |
| 23033862041 | 16 | 0 | | 0 | 0 | 0 |
| 26872839048 | 14 | 40 | | 0 | 0 | 0 |
| 30711816055 | 13 | 20 | | 0 | 0 | 0 |
| 34550793062 | 12 | 0 | | 0 | 0 | 0 |
| 38389770069 | 10 | 40 | | 0 | 0 | 0 |

EPACTÆ CORRECTÆ

Capitis XXV.

[Corrected Epacts, of Chapter XXV]

(Folios 557–558. Column headers as printed: **Anni** = Years; **D.** = Days; **H.** = Hours; **M.** = Minutes; **Sec.** = Seconds; **Ter.** = Thirds; **Quar.** = Fourths.)

| | Anni | D. | H. | M. | Sec. | Ter. | Quar. |
|--|--------|----|----|----|------|------|-------|
| | 400 | 9 | 3 | 50 | 2 | 36 | 40 |
| | 800 | 18 | 7 | 40 | 5 | 13 | 20 |
| | 1200 | 27 | 11 | 30 | 7 | 50 | 0 |
| | 1600 | 7 | 2 | 36 | 7 | 15 | 52 |
| | 2000 | 16 | 6 | 26 | 9 | 52 | 32 |
| | 2400 | 25 | 10 | 16 | 11 | 29 | 12 |
| | 2800 | 5 | 1 | 22 | 10 | 55 | 4 |
| | 3200 | 14 | 5 | 12 | 13 | 31 | 44 |
| | 3600 | 23 | 9 | 2 | 16 | 8 | 24 |
| | 4000 | 3 | 0 | 8 | 15 | 34 | 16 |
| | 6000 | 19 | 6 | 34 | 25 | 26 | 48 |
| | 8000 | 6 | 0 | 16 | 32 | 8 | 32 |
| | 10000 | 22 | 6 | 42 | 42 | 1 | 4 |
| | 20000 | 15 | 0 | 41 | 20 | 51 | 20 |
| | 30000 | 7 | 18 | 39 | 59 | 41 | 36 |
| | 40000 | 0 | 12 | 38 | 38 | 31 | 52 |
| | 50000 | 22 | 19 | 21 | 20 | 32 | 56 |
| | 60000 | 15 | 13 | 19 | 59 | 23 | 12 |
| | 70000 | 8 | 7 | 18 | 38 | 13 | 28 |
| | 80000 | 1 | 1 | 17 | 17 | 3 | 44 |
| | 90000 | 23 | 7 | 59 | 59 | 4 | 48 |
| | 100000 | 16 | 1 | 58 | 37 | 55 | 4 |
| | 200000 | 2 | 15 | 13 | 12 | 39 | 20 |
| | 300000 | 18 | 17 | 11 | 50 | 34 | 24 |
| | 400000 | 5 | 6 | 26 | 25 | 18 | 40 |

| Anni | D. | H. | M. | Sec. | Ter. | Quar. |
|-----------|----|----|----|------|------|-------|
| 500000 | 21 | 8 | 25 | 3 | 13 | 44 |
| 600000 | 7 | 21 | 39 | 37 | 58 | 0 |
| 700000 | 23 | 23 | 38 | 15 | 53 | 4 |
| 800000 | 10 | 12 | 52 | 50 | 37 | 20 |
| 900000 | 26 | 14 | 51 | 28 | 32 | 24 |
| 1000000 | 13 | 4 | 6 | 3 | 16 | 40 |
| 2000000 | 26 | 8 | 12 | 6 | 33 | 20 |
| 3000000 | 9 | 23 | 34 | 6 | 39 | 12 |
| 4000000 | 23 | 3 | 40 | 9 | 55 | 52 |
| 5000000 | 6 | 19 | 2 | 10 | 1 | 44 |
| 6000000 | 19 | 23 | 8 | 13 | 18 | 24 |
| 7000000 | 3 | 14 | 30 | 13 | 24 | 16 |
| 8000000 | 16 | 18 | 36 | 16 | 40 | 56 |
| 9000000 | 0 | 9 | 58 | 16 | 46 | 48 |
| 10000000 | 13 | 14 | 4 | 20 | 3 | 28 |
| 20000000 | 27 | 4 | 8 | 40 | 6 | 56 |
| 30000000 | 11 | 5 | 28 | 56 | 59 | 36 |
| 40000000 | 24 | 19 | 33 | 17 | 3 | 4 |
| 50000000 | 8 | 20 | 53 | 33 | 55 | 44 |
| 60000000 | 22 | 10 | 57 | 53 | 59 | 12 |
| 70000000 | 6 | 12 | 18 | 10 | 51 | 52 |
| 80000000 | 20 | 2 | 22 | 30 | 55 | 20 |
| 90000000 | 4 | 3 | 42 | 47 | 48 | 0 |
| 100000000 | 17 | 17 | 47 | 7 | 51 | 28 |
| 200000000 | 5 | 22 | 50 | 12 | 32 | 8 |
| 300000000 | 23 | 16 | 37 | 20 | 23 | 36 |
| 400000000 | 11 | 21 | 40 | 25 | 4 | 16 |
| 500000000 | 0 | 2 | 43 | 29 | 44 | 56 |
| 600000000 | 17 | 20 | 30 | 37 | 36 | 24 |
| 700000000 | 6 | 1 | 33 | 42 | 17 | 4 |

| Anni | D. | H. | M. | Sec. | Ter. | Quar. |
|-------------|----|----|----|------|------|-------|
| 800000000 | 23 | 19 | 20 | 50 | 8 | 32 |
| 900000000 | 12 | 0 | 23 | 54 | 49 | 12 |
| 1000000000 | 0 | 5 | 26 | 59 | 29 | 52 |
| 2000000000 | 0 | 10 | 53 | 58 | 59 | 44 |
| 3000000000 | 0 | 6 | 20 | 58 | 29 | 36 |
| 4000000000 | 0 | 21 | 47 | 57 | 59 | 28 |
| 5000000000 | 1 | 3 | 14 | 57 | 29 | 20 |
| 6000000000 | 1 | 8 | 41 | 56 | 59 | 12 |
| 7000000000 | 1 | 14 | 8 | 56 | 29 | 4 |
| 8000000000 | 1 | 19 | 35 | 55 | 58 | 56 |
| 9000000000 | 2 | 1 | 2 | 55 | 28 | 48 |
| 10000000000 | 2 | 6 | 29 | 54 | 58 | 40 |
| 20000000000 | 4 | 12 | 59 | 49 | 57 | 20 |
| 30000000000 | 6 | 19 | 29 | 44 | 56 | 0 |
| 40000000000 | 9 | 1 | 59 | 39 | 54 | 40 |
| 50000000000 | 11 | 8 | 29 | 34 | 53 | 20 |
| 60000000000 | 13 | 14 | 59 | 29 | 51 | 0 |

PROGRESSVS NOUILVNIOBVM, AC PLENILVNIOBVM

Capitis XXVI.

[Progress of the New Moons and Full Moons, of Chapter XXVI]

(Folio 558, foot of leaf. Same column scheme: **Anni**, **D.**, **H.**, **M.**, **Sec.**, **Ter.**, **Quar.**)

| Anni | D. | H. | M. | Sec. | Ter. | Quar. |
|------|----|----|----|------|------|-------|
| 400 | 20 | 8 | 54 | 0 | 34 | 8 |
| 800 | 11 | 5 | 3 | 57 | 57 | 28 |
| 1200 | 2 | 1 | 23 | 55 | 20 | 48 |
| 1600 | 22 | 10 | 7 | 55 | 54 | 56 |
| 2000 | 13 | 6 | 17 | 53 | 18 | 16 |
| 2400 | 4 | 2 | 27 | 50 | 41 | 36 |
| 2800 | 24 | 11 | 21 | 51 | 15 | 44 |

| Anni | D. | H. | M. | Sec. | Ter. | Quar. |
|------|----|----|----|------|------|-------|
| 3200 | 15 | 7 | 31 | 48 | 39 | 4 |

(Table continues on the following leaf; catchword "PRO-".)

Caput XXVIII — *De calculo lunationum* (continued)

Progress of New Moons and Full Moons, of Chapter XXVI (continued)

PROGRESSVS NOVILVNIORVM, ac Pleniluniorum. Capitis XXVI.

The sexagesimal columns are: **D** (days), **H** (hours), **M** (minutes), **Sec.** (seconds), **Ter.** (thirds), **Quar.** (fourths). The **Anni** (years) column runs down the left; a blank ruled column separates it from **D**. Horizontal rules group the entries in fours (as printed).

| Anni | D | H | M | Sec. | Ter. | Quar. |
|-------|---|---|---|------|------|-------|
| 3600 | 6 | 3 | 4 | 46 | 2 | 24 |
| | | | 1 | | | |
| 4000 | 2 | 1 | 3 | 46 | 36 | 32 |
| | 6 | 2 | 5 | | | |
| 6000 | 1 | 6 | 9 | 36 | 44 | 0 |
| | 0 | | | | | |
| 8000 | 2 | 1 | 2 | 30 | 2 | 16 |
| | 3 | 2 | 7 | | | |
| 10000 | 7 | 6 | 1 | 20 | 9 | 44 |
| 20000 | 1 | 1 | 2 | 40 | 19 | 28 |
| | 4 | 2 | | | | |
| 30000 | 2 | 1 | 4 | 0 | 29 | 12 |
| | 1 | 8 | | | | |
| 40000 | 2 | 0 | 5 | 20 | 38 | 56 |
| | 9 | | | | | |
| 50000 | 6 | 1 | 2 | 37 | 37 | 52 |
| | | 7 | 2 | | | |
| 60000 | 1 | 2 | 2 | 57 | 47 | 36 |

| Anni | D | H | M | Sec. | Ter. | Quar. |
|---------|---|---|---|------|------|-------|
| | 3 | 3 | 3 | | | |
| 70000 | 2 | 5 | 2 | 17 | 57 | 20 |
| | 1 | | 5 | | | |
| 80000 | 2 | 1 | 2 | 38 | 7 | 4 |
| | 8 | 1 | 6 | | | |
| 90000 | 6 | 4 | 4 | 55 | 6 | 0 |
| | | | 3 | | | |
| 100000 | 1 | 1 | 4 | 15 | 15 | 44 |
| | 3 | 0 | 5 | | | |
| 200000 | 2 | 2 | 3 | 30 | 31 | 28 |
| | 6 | 1 | 0 | | | |
| 300000 | 1 | 1 | 3 | 42 | 36 | 24 |
| | 0 | 9 | 1 | | | |
| 400000 | 2 | 6 | 1 | 57 | 52 | 8 |
| | 4 | | 6 | | | |
| 500000 | 8 | 4 | 1 | 9 | 57 | 4 |
| | | | 8 | | | |
| 600000 | 2 | 1 | 3 | 25 | 12 | 48 |
| | 1 | 5 | | | | |
| 700000 | 5 | 1 | 4 | 37 | 17 | 44 |
| | | 3 | | | | |
| 800000 | 1 | 2 | 4 | 52 | 33 | 28 |
| | 8 | 3 | 9 | | | |
| 900000 | 2 | 2 | 5 | 4 | 38 | 24 |
| | | 1 | 1 | | | |
| 1000000 | 1 | 8 | 3 | 19 | 54 | 8 |
| | 6 | | 6 | | | |
| 2000000 | 3 | 4 | 2 | 36 | 37 | 28 |
| | | | 8 | | | |
| 3000000 | 1 | 1 | 4 | 56 | 31 | 36 |
| | 9 | 3 | | | | |
| 4000000 | 6 | 8 | 5 | 13 | 14 | 56 |
| | | | 7 | | | |
| 5000000 | 2 | 1 | 3 | 33 | 9 | 4 |

| Anni | D | H | M | Sec. | Ter. | Quar. |
|-----------|---|---|---|------|------|-------|
| | 2 | 7 | 3 | | | |
| 6000000 | 9 | 1 | 2 | 49 | 52 | 24 |
| | | 3 | 5 | | | |
| 7000000 | 2 | 2 | 2 | 9 | 46 | 32 |
| | 5 | 2 | | | | |
| 8000000 | 1 | 1 | 5 | 26 | 29 | 52 |
| | 2 | 7 | 4 | | | |
| 9000000 | 2 | 2 | 3 | 46 | 24 | 0 |
| | 9 | | 0 | | | |
| 10000000 | 1 | 2 | 2 | 3 | 7 | 20 |
| | 5 | 2 | 3 | | | |
| 20000000 | 2 | 8 | 2 | 3 | 3 | 52 |
| 30000000 | 1 | 6 | 2 | 6 | 11 | 12 |
| | 8 | | 5 | | | |
| 40000000 | 4 | 1 | 4 | 6 | 7 | 44 |
| | | 6 | | | | |
| 50000000 | 2 | 1 | 2 | 9 | 15 | 4 |
| | 0 | 4 | 7 | | | |
| 60000000 | 7 | 0 | 6 | 9 | 11 | 36 |
| 70000000 | 2 | 2 | 2 | 12 | 18 | 56 |
| | 2 | 2 | 9 | | | |
| 80000000 | 9 | 8 | 8 | 12 | 15 | 28 |
| 90000000 | 2 | 6 | 3 | 15 | 22 | 48 |
| | 5 | | 4 | | | |
| 100000000 | 1 | 1 | 1 | 15 | 19 | 20 |
| | 1 | 6 | 0 | | | |
| 200000000 | 2 | 8 | 2 | 30 | 38 | 40 |
| | 3 | | 0 | | | |
| 300000000 | 5 | 1 | 4 | 42 | 47 | 12 |
| | | 1 | 6 | | | |
| 400000000 | 1 | 3 | 5 | 58 | 6 | 32 |
| | 7 | | 6 | | | |
| 500000000 | 2 | 2 | 7 | 13 | 25 | 52 |
| | 8 | 0 | | | | |

| Anni | D | H | M | Sec. | Ter. | Quar. |
|--------------------------------|--------|--------|--------|------|------|-------|
| 600000000 | 1
0 | 2
3 | 3
3 | 25 | 34 | 24 |
| 700000009 [recte: 700000000] | 2
2 | 1
5 | 4
3 | 40 | 53 | 44 |
| 800000000 | 4 | 1
9 | 9 | 53 | 2 | 16 |
| 900000000 | 1
6 | 1
1 | 2
0 | 8 | 21 | 36 |
| 1000000000 | 2
8 | 3 | 3
0 | 23 | 40 | 56 |
| 2000000000 | 2
6 | 1
8 | 1
6 | 44 | 11 | 4 |
| 3000020000 [recte: 3000000000] | 2
5 | 9 | 3 | 4 | 41 | 12 |
| 4000000000 | 2
3 | 2
3 | 4
9 | 25 | 11 | 20 |
| 5000000000 | 2
2 | 1
4 | 3
5 | 45 | 41 | 28 |
| 6000000000 | 2
1 | 5 | 2
2 | 6 | 11 | 36 |
| 7000000000 | 1
9 | 2
0 | 8 | 26 | 41 | 44 |

Folio 560 (table concluded)

The heading and column heads (*PROGRESSVS NOVILVNIIORVM, ac Pleniluniorum. Capitis XXVI.*) are reprinted at the head of this leaf; the entries continue:

| Anni | D | H | M | Sec. | Ter. | Quar. |
|-------------|----|----|----|------|------|-------|
| 8000000000 | 18 | 10 | 54 | 47 | 11 | 52 |
| 9000000000 | 17 | 1 | 41 | 7 | 42 | 0 |
| 10000000000 | 15 | 16 | 27 | 28 | 12 | 8 |
| 20000000000 | 1 | 20 | 10 | 53 | 13 | 28 |
| 30000000000 | 17 | 12 | 38 | 21 | 25 | 36 |
| 40000000000 | 3 | 16 | 21 | 46 | 26 | 56 |

| Anni | D | H | M | Sec. | Ter. | Quar. |
|-------------|----|----|----|------|------|-------|
| 60000000000 | 19 | 8 | 49 | 14 | 39 | 4 |
| 70000000000 | 5 | 12 | 32 | 39 | 40 | 24 |

Roots (Radices) of the New Moons

Roots of the New Moons, serving both for the corrected Epacts of Chapter XXV and for the Progressions of New Moons of Chapter XXVI, as was said in Chapters XXV and XXVI for reckoning the New Moons of the centesimal (century) years.

RADICES NOVILVNIOVRVM INSERVIENTES TAM EPACTIS CORRECTIS Capitis 25. quam Progressibus Nouiluniorum Capitis 26. vt in Nouiluniis annorum centesimorum supputandis Cap. 25. & 26. dictum est.

Left stub column: **Indices radicum** (indices of the roots), numbered 0–3.

| Indices radicum | Anni | D | H | M | Sec. | Ter. | Quar. | Month |
|-----------------|------|--------|--------|--------|------|------|-------|-------|
| 0 | 1600 | 1
4 | 8 | 3
4 | 54 | 20 | 0 | Mart. |
| 1 | 1700 | 2
0 | 1
6 | 4
8 | 24 | 28 | 32 | Mart. |
| 2 | 1800 | 2
6 | 1 | 1 | 54 | 37 | 4 | Mart. |
| 3 | 1900 | 3
1 | 9 | 1
5 | 24 | 45 | 36 | Mart. |

Roots of the same New Moons, with a whole Lunar month added.

RADICES EORVNDEM NOVILVNIOVRVM AD MENsem integrum Lunarem additorum.

| Indices radicum | Anni | D | H | M | Sec. | Ter. | Quar. | Month |
|-----------------|------|--------|--------|--------|------|------|-------|-------|
| 0 | 1600 | 4
3 | 2
1 | 1
8 | 57 | 30 | 48 | Mar. |
| 1 | 1700 | 5
0 | 5 | 3
2 | 27 | 39 | 20 | Mar. |
| 2 | 1800 | 5
5 | 1
3 | 4
5 | 57 | 47 | 52 | Mar. |
| 3 | 1900 | 6 | 2 | 5 | 27 | 56 | 24 | Mar. |

| Indices radicum | Anni | D | H | M | Sec. | Ter. | Quar. | Month |
|-----------------|------|---|---|---|------|------|-------|-------|
| | | 0 | 1 | 9 | | | | |

Roots of the Full Moons

Roots of the Full Moons.

RADICES PLENILVNIOVRVM.

| Indices radicum | Anni | D | H | M | Sec. | Ter. | Quar. | Month |
|-----------------|------|---|---|---|------|------|-------|-------|
| 0 | 1600 | 2 | 2 | 5 | 55 | 55 | 24 | Mar. |
| | | 9 | | 6 | | | | |
| 1 | 1700 | 4 | 1 | 1 | 26 | 3 | 56 | Apr. |
| | | | 1 | 0 | | | | |
| 2 | 1800 | 9 | 1 | 2 | 56 | 12 | 28 | Apr. |
| | | | 9 | 3 | | | | |
| 3 | 1900 | 1 | 3 | 3 | 26 | 21 | 0 | Apr. |
| | | 5 | | 7 | | | | |

Roots of the same Full Moons, with a whole Lunar month added.

RADICES EORVNDEM PLENILVNIOVRVM AD mensem integrum Lunarem additorum.

| Indices radicum | Anni | D | H | M | Sec. | Ter. | Quar. | Month |
|-----------------|------|---|---|---|------|------|-------|-------|
| 0 | 1600 | 5 | 1 | 4 | 59 | 6 | 12 | Mar. |
| | | 8 | 5 | 0 | | | | |
| 1 | 1700 | 3 | 2 | 5 | 29 | 14 | 44 | Apr. |
| | | 3 | 3 | 4 | | | | |
| 2 | 1800 | 3 | 8 | 7 | 59 | 23 | 16 | Apr. |
| | | 9 | | | | | | |
| 3 | 1900 | 4 | 1 | 2 | 29 | 31 | 48 | Apr. |
| | | 4 | 6 | 1 | | | | |

THE END.

FINIS.

Computus Ecclesiasticus

[New work — title page (p. 561 / unnumbered leaf).]

The Ecclesiastical Computus, delivered by the joints of the fingers, and by tables.

COMPVTVS ECCLESIASTICVS PER DIGITORVM ARTICVLOS, ET TABVLAS TRADITVS.

PRÆFATIO. — Preface

In expounding the Calendar we set out most fully not only the reasons and foundations of the correction, but also answered our opponents' arguments as thoroughly as we could. It will therefore not be foreign to our purpose to add, by way of an appendix, a number of rules by which everything contained in the Gregorian Calendar may be found — either from memory on the joints of the fingers, or, more quickly than can be told, in tables. In this way nothing further will seem to be wanting to a complete exposition of the Calendar.

I have added these rules to our exposition of the Calendar all the more willingly because I have learned that many who, before the reform of the Calendar, knew the ecclesiastical computus by heart on the joints of the fingers were much troubled that they could no longer use those same rules with the new Calendar. This work cannot fail to be welcome to them, especially when they see that our rules — fitted to a perpetual Calendar in which roughly every hundredth year one day is dropped — are far easier than the old rules of the computists. For less-skilled readers we have also added several tables, for the most part entirely new and not previously seen, though some of them were also drawn up in the exposition of the Calendar; by these, everything that can be wanted in the ecclesiastical computus is found most briefly and without any trouble or labour.

For this reason we have divided the whole Computus into two parts. The first comprises the rules by which everything pertaining to the ecclesiastical computus is worked out from memory; the second part contains the tables relevant to the same matter.

COMPVTI ECCLESIASTICI PARS PRIMA, per digitorum articulos memoriter. — Part One of the Ecclesiastical Computus, by the joints of the fingers, from memory

CAPVT I. — De Aureo numero. (On the Golden Number)

[Margin: What the cycle of the golden number is. (*Cyclus aurei numeri quid.*)]

The nineteen-year cycle of the golden number is a revolution of 19 years, from 1 up to 19; and when that revolution is completed, it returns again to 1, so that in any given year some one of those nineteen golden numbers is in use. How these 19 golden numbers were once set down in the Calendar to mark the new moons, and why there are neither more nor fewer than 19, we have explained at length in our exposition of the Gregorian Calendar, chapter 8. Which golden number, then, is in use in any given year we shall learn by heart in the following way.

[Margin: Placement of the centennial years on the joints of the fingers, for finding the golden number of any year. (*Collocatio annorum centesimorum in articulis digitorum ad aureum numerum cuiuslibet anni inueniendum.*)]

On the joints of the four fingers of the left hand, with the thumb left out (by the term "joints" we understand also the fingertips, so that on each finger, the thumb excepted, we count seven joints, beginning from the inner root of each finger and calling the outermost, just under the nail, the fifth, and so on), the centennial years from the birth of Christ our Lord are to be placed, in this way. At the root, or first joint, of the inner side of the index finger, the year 0 is placed. At the root of the middle finger the year 100 is set. At the root of the ring finger, 200. At the root of the little finger, 300. Then at the second joint of the index finger the year 400 is set; at the second joint of the middle finger, 500; at the second joint of the ring finger, 600; at the second joint of the little finger, 700. Next, at the third joint of the index finger, 800; at the third joint of the middle finger, 900; at the third joint of the ring finger, 1000; and after these, at the third joint of the little finger, 1100. At the fourth joint of the index finger — that is, at the fingertip — 1200; at the tip of the middle finger, 1300; at the tip of the ring finger, 1400; at the tip of the little finger, 1500. Then at the fifth joint of the index finger, which is the outer one just under the nail, 1600; at the fifth joint of the middle finger, 1700; at the fifth joint of the ring finger, 1800. And since the centennial years have now been placed on 19 joints — which is exactly the number of the golden numbers — one must return to the inner root of the index finger, and there set the year 1900; then

at the root of the middle finger, 2000; and so on, always returning after the nineteenth joint to the inner root of the index finger.

[Margin: How to find easily the place of any centennial year, however large, on the joints of the fingers. (*Inuentio facilis sedis cuiusuis centesimi, quamuis magni, in digitorum articulis.*)]

Moreover, to avoid having to run repeatedly over those 19 joints of the left hand we have described, it is enough to learn thoroughly the places of the 19 centuries from the year 0 up to the year 1900, as stated. Once these are accurately known, we shall easily find the place of any century, however large, in this way. From the number of centuries subtract 20 as often as it can be done, and to the remaining number add as many units as the number of times 20 was subtracted. For where the century of this sum has its place, there too will be the place of the century proposed.

For example, let the place of the year 4900 be sought. From the number 49 of centuries (the number of centuries is always expressed by the figures of the year with the last two on the right dropped — thus in the year 34561 the number of centuries is 345, expressed by the remaining figures once the two on the right, namely 61, are cast away, and so on), subtract 20 twice. To the remaining number, 9, add 2, making 11; and since the eleventh century — that is, the year 1100 — has its place on the third inner joint of the little finger, the year 4900 will be placed there.

Likewise, suppose one wants the place of the year 9700. From the number 97 of centuries subtract 20 four times, and 17 remain; add to these the 4, and they make 21. Subtracting 20 once more, 1 remains; and adding 1 for that single subtraction, they make 2. Since, then, the year 200 is located at the root of the ring finger, the proposed year 9700 will be placed there.

Again, since from 20 centuries — that is, from the year 2000 — 20 can be subtracted once, with 0 remaining, then adding 1 for that single subtraction gives 1. So where the first century is placed, namely at the root of the middle finger, there too the year 2000 will have its place.

[Margin: How to find out how often 20 is contained in any large number of centuries. (*Quoties contineantur 20. in quamuis magno numero centenariorum, quo pacto cognoscatur.*)]

It will not be difficult, however, for anyone even moderately versed in arithmetic to find out how many times 20 is contained in any number of centuries, and

hence in which joint that century is to be placed. For if, after dropping the first figure of the centuries on the right, the remaining number is divided by 2 — that is, halved (which is easily done in one's head) — the half of the number will show how often 20 is contained in the given number of centuries. If, then, a unit happens to be left over in the halving, it is to be taken as a ten, and this ten placed before the dropped figure, and this whole number added to the halved number. And if the number so formed exceeds 20, the same must be done with it: that is, drop the first figure on the right, halve it, and so on, proceeding until a number less than 20 is obtained.

For example, if the year 57800 is proposed, where the number of centuries is 578: drop the first figure, 8; the half of the remaining number, 57, is 28. Therefore 20 is contained in 578 as many times as there are units in 28. And because in the halving 1 is left over, it is to be placed before the dropped figure 8, making 18, which added to the aforesaid half, 28, makes 46 — a number greater than 20. So drop the first figure, 6; the half of the remaining number, 4, is 2, with nothing left over; and if to this half the dropped figure 6 is added, the number becomes 8, less than 20. Since, then, the eighth century is placed on the third inner joint of the index finger, there will be the place of the proposed year 57800. And so with the rest.

[Margin: In which joint each century not greater than 1800 is placed. (*In quo articulo collocetur quilibet centesimus non maior, quam 1800.*.)]

So that you may also easily know the place of a century not greater than 1800: add 1 to the number of centuries. For the joint that the resulting number indicates will be the place of the given century. Thus, if the year 900 is given, adding 1 to 9 (the number of centuries) makes 10; therefore the year 900 has its place on the tenth joint — that is, on the third joint of the middle finger — and so with the rest.

[Margin: Placement of the golden numbers on the joints of the fingers, for finding the golden number of any year. (*Collocatio aureorum numerorum in digitorum articulis, ad aureum numerum cuiusvis anni reperiendum.*.)]

Once the centennial years have been placed by this method on the aforesaid 19 joints, all 19 golden numbers are to be arranged on the same joints, in this order. Since in the year immediately before the birth of Christ the golden number was 1, this golden number 1 is to be placed at the root of the index finger, where the year of the Lord 0 was set — that is, the year that immediately preceded Christ's birth. Now since the cycle of the golden number is contained five times in 100

years, with 5 left over, if to the golden number 1 placed at the root of the index finger we add 5, we get 6, to be placed as the golden number at the root of the middle finger — the number which is owed to the year 100 after the birth of Christ and to all the other centuries that fall on that root under the arrangement given above. If again we add 5 to 6, we get 11, to be set as the golden number at the inner root of the ring finger, which answers to the year 200 and to all the other centuries placed there. In the same way, if we add 5 once more to 11, we get 16, to be set as the golden number at the inner root of the little finger, which is owed to the year 300 and to the other centuries placed there. Again, adding 5 to 16 gives 21; but casting out 19 (since no golden number can be greater than 19), 2 remain, to be placed as the golden number on the second joint of the index finger above the root. And so, proceeding thus, you will find all the golden numbers to be set on the 19 joints, each owed to those centuries that fall on the same joints.

By this reckoning you will find that on the second joint of the middle finger 7 is placed; on the second joint of the ring finger, 12; on the second joint of the little finger, 17. On the third joint of the index finger, 3; on the third of the middle finger, 8; on the third of the ring finger, 13; on the third of the little finger, 18. On the fourth joint of the index finger — that is, at its tip — 4; on the tip of the middle finger, 9; on the tip of the ring finger, 14; on the tip of the little finger, 19. On the fifth joint of the index finger, which is the outer one just under the nail, 5; on the fifth joint of the middle finger, 10; and finally on the fifth joint of the ring finger, 15. In this way all 19 golden numbers are placed on the 19 joints on which we set the centennial years.

But it is enough to have found, by this method, the four golden numbers 1, 6, 11, and 16 placed at the four inner roots of the fingers. For if from the golden number of any root you proceed by the natural series of numbers toward the second joint of the same finger, up to the fifth (the outermost just under the nail) — except for the little finger, on which alone you must proceed only as far as the tip — you will have the golden numbers to be placed on the remaining joints. Thus you will find that on the second joint of the little finger, at whose root the golden number 16 is set, the golden number 17 is to be placed; on the third, 18; and at the tip, 19. Likewise on the second joint of the middle finger, at whose root the golden number 6 is set, the golden number 7 is to be placed; on the third, 8; at the tip, 9; and on the fifth joint, which is the outer one just under the nail, 10 — and so with the rest, as before.

[Margin: The easiest placement of the golden numbers on the joints of the fingers. (*Facillima collocatio aureorum numerorum in articulis digitorum.*)]

You will, however, place these same golden numbers on the joints of the fingers more easily if, beginning from the golden number 1 set at the inner root of the index finger, you proceed by the natural series of numbers toward its second joint, up to the fifth joint (the outer one just under the nail); then go back to the inner root of the middle finger, and again proceed toward its second joint up to the fifth; and so with the rest. In this way the golden number 2 will be placed on the second inner joint of the index finger, 3 on the third, and so on, so that the golden number 19 falls on the tip of the little finger, as before.

The reason for this is as follows. Any joint of any finger stands 400 years distant from the next joint of the same finger, or of the immediately preceding one (if, under the arrangement of the centuries given above, we count the joints from the root of the index finger through the second, third, and fourth up to the fifth). Now the cycle of the golden number is contained in 400 years twenty-one times, with a unit left over. Hence a unit added to the golden number of any joint yields, for the immediately following joint — on the same finger or on the next one following — a golden number greater by one; so that the golden numbers advance by the natural series of numbers from the root of the index finger toward its second, third, fourth, and fifth joints, and thence toward the root of the middle finger, its second joint, third, and the others, and so on.

[Margin: Finding the golden number of any year. (*Inuentio aurei numeri cuiuslibet anni.*)]

From all this the golden number of any year is easily found. For if some centennial year is given, its place among the above 19 joints is to be found, together with the golden number owed to that century. But if any non-centennial year is given, one must seek out the place of the golden number of the century immediately preceding the given year, as we have now shown. Then, since in each year the golden number is increased by a unit, as many units are to be added to the golden number found for that century as the number of years by which the given year

falls after that century. For in this way the golden number of the proposed year will be produced. But if the composite number turns out to be greater than 19, the number 19 must be cast out as often as it can be cast out; for the remaining number will give the golden number sought. And if 19 or nothing remains, the golden number is 19.

[Margin: By what method 19 is easily cast out of a larger number. (*Qua ratione facile abiiciantur 19. ex maiore numero.*)]

Further, to cast out 19 from a large number more easily, cast out 20 as often as it can be done, and for each casting-out restore a single unit — the unit you have cast away together with the 19.

You will also do better if first, in the way just described, you cast out 19 from the number of years after the century immediately preceding — if they can be cast out — and add the remainder to the golden number of that century, so as to compose the golden number of the proposed year.

For example: in the year 2500 the golden number is 12, since the place of that year is the second inner joint of the ring finger, where the golden number 12 is set — as is clear if you count from 1, beginning at the root of the index finger, up to that joint which is twelfth in the order we have described (that is, going from the root of each finger toward the second joint up to the fifth, the outer one under the nail); or else if, from the golden number 11 set at the root of the ring finger, you proceed upward by the natural series of numbers to that same second joint, where the place of the year 2500 is.

Let the golden number of the year 2507 be sought again. The place of the year 2500 is on the second joint of the ring finger, and there the golden number 12 owed to it is set, as we have just said; if to this you add 7 (for it is the seventh year after the year 2500 that is proposed), you produce 19 for the golden number of the year 2507.

Likewise, let the golden number of the year 983 be sought. The place of the year 900 is on the third joint of the middle finger, and there the golden number 8 owed to the year 900 is set. Now since 20 can be cast out four times from the 83 years, we shall add four units, on account of those four castings-out, to the 3 remaining years; and the number so made up, 7, we shall add to the golden number 8 owed to the year 900, so as to produce the golden number 15 for the year 983.

Again, let the golden number of the year 1604 be sought. The place of the year 1600 is on the fifth joint of the index finger — that is, on the outer one under the nail — where the golden number 5 is set; if to this we add the 4 remaining years, we produce 9 for the golden number of the year 1604.

Suppose further the year 2108 is given. The place of the year 2100 is at the root of the ring finger, where the golden number 11 is set; if to this we add the remaining 8 years, we make up the golden number 19 for the year 2108.

Lastly, let the year 3003 be given. The place of the year 3000 is on the third inner joint of the little finger, where the golden number 18 is set; if to this we add the

remaining 3 years, we make up 21, and casting out 19, 2 remain for the golden number of the year 3003.

[Margin: Finding the golden number by the rules of arithmetic. (*Inuentio aurei numeri per praecepta Arithmetices.*)]

The golden number will also be found without trouble, in any year, by the rules of arithmetic, in this way. To the proposed year of the Lord add 1, and divide the sum by 19. The number left over from the division — no account being taken of the quotient, which only shows how many revolutions of the cycle of golden numbers have been completed from Christ up to the proposed year — will be the golden number of the proposed year. And if nothing remains from the division, the golden number will be 19. For example, if the golden number of the year 1589 is sought, I add 1 and divide the sum, 1590, by 19, and find that 13 is left over from the division; so in the year 1589 the golden number was 13. Again, if the golden number is sought for the year 1614, adding 1 gives 1615, and when this is divided by 19 nothing remains; therefore in the year 1614 the golden number will be 19. And so with the rest.

You may also divide the years of the Lord by 19 without first adding a unit — provided that you add a unit to the quotient.

CAPVT II. — De Epactis, Nouiluniis, Ætate Lunæ, & litera Martyrologij. (On the Epacts, New Moons, the Age of the Moon, and the Letter of the Martyrology)

[Margin: What the epact is. How the golden numbers are placed on the thumb, in order to find the epacts. What must be added to the golden numbers placed on the thumb, so that they become the epacts before the restored Calendar. (*Epacta quid. Quo pacto aurei numeri in Pollice locentur, ad Epactas inueniendas. Quid addendum sit aureis numeris in Pollice collocatis, vt fiant Epactae ante Calendarium restitutum.*)]

[Margin: What must be subtracted from the epacts that were in use before the correction, so that the rest become the epacts after the restoration of the year. (*Quid ex Epactis, quae ante correctionem vsurpabantur, auferendum sit, vt reliquae fiant Epactae post anni restitutionem.*)]

The epacts are the days by which the solar year exceeds the lunar, as we showed in the exposition of the Calendar, chapter 9, number 14. For in the first year 11 days are left over, in the second 22, in the third 33 — that is, 3 (for the number 30 is to be cast out) — in the fourth 14, and so on. Now to the 19 golden numbers,

one by one, there correspond at various times 19 different epacts, as we taught in the same exposition, chapter 11, number 1, and chapter 12, number 11. The epact of any year, then — the one that corresponds to the current golden number and that indicates the new moons in the Calendar — we shall find, both before the reform of the year and after it, on the thumb of the left hand, in this way.

On the tip of the left thumb, on the middle joint, and on the lowest joint, the golden numbers are to be placed in this order. On the tip is set 1; on the middle joint, 2; on the lowest, 3. Then again on the tip, 4; on the middle joint, 5; on the lowest, 6; then again on the top of the thumb, 7; and so on, so that the last golden number, 19, falls on the tip of the thumb.

After this, to the golden number placed on the tip of the thumb let 10 be added; to the golden number set on the middle joint let 20 be joined; and to the golden number placed on the lowest joint let nothing be added. For the numbers so composed (casting out 30, if the number formed is greater than 30) are the epacts that, together with those golden numbers from which they were formed on the thumb, were in use before the correction of the Calendar.

But if from each of the epacts found in this way 10 are subtracted (since, on account of the ten days removed, the lunations now fall ten days later than before the correction), there remain the epacts running with these same golden numbers after the emendation of the Calendar, up to the year 1700 exclusive. For then, because on account of the omission of the bissextile day the lunations fall one day later still, 11 must be subtracted, up to the year 1900 exclusive; and after this, 12 must be subtracted, on account of another omission of the bissextile day. But in the year 1800, although the intercalary day is omitted, no change is nevertheless made in the epacts, the equation of the Moon requiring it to be so, as was declared in the exposition of the Calendar, chapter 11, number 8. So then the same number, 11, is to be subtracted, which

which we said must be subtracted in the year 1700. In this same way there will always be as many units beyond 10 to be subtracted as there are days by which the lunations have descended in the Calendar. And if the subtraction cannot be carried out, 30 must be added to the epact that has been found, so that the subtraction can be made.

Therefore, to find the epact from the year of the correction up to the year 1700 exclusive, look up in Chapter 1 the golden number of the proposed year, and place it on the Thumb, as has been said. Then add 10 if it lies at the top of the Thumb, or 20 if it lies at the middle joint, or finally 0 — that is, nothing — if it lies

at the bottom. From the number so formed, if you subtract 10 (first adding 30 if the subtraction cannot otherwise be made), the remaining number will give the current epact you are seeking.

[Margin: How the epacts are investigated from the year of the correction up to the year 1700, exclusive.]

For example. In the year 1599 the golden number is 4, which falls at the tip of the Thumb. I therefore add 10 to it and make 14. Subtracting 10, there remain 4 for the epact of the year 1599.

Again, in the year 1609 the golden number is 14, falling at the middle joint of the Thumb. Adding 20, then, gives 34; and subtracting 10 leaves 24 for the epact of the year 1609.

Once more, in the year 1617 the golden number is 3, seated at the bottom joint of the Thumb. Nothing therefore is to be added to it; but since 10 cannot be taken from 3, we shall add 30 so as to have 33, from which, if 10 be taken away, 23 remains for the epact of the year 1617.

Further, in the year 2314 the golden number is 16, falling at the tip of the Thumb. Adding 10, then, gives 26. But subtracting 14 (because up to that year inclusive the lunations will have descended by 4 days beyond those ten by which the descent was made in the year of the correction), 12 remains for the epact of the year 2314.

Finally, in the year 3129 the golden number is 14, falling at the middle joint of the Thumb. Adding 20, then, gives 34; and subtracting 17 (because up to that year inclusive seven changes will have been made in the lunations in the downward direction), 17 remains for the epact of the year 3129.

You must know, however, that epact 25 is to be taken as marked with a different colour or character whenever it is produced from a golden number greater than 11. Likewise epact 19, written on the last day of December with a different character or colour as well, is also in use whenever it is generated from the golden number 19 — as happened in the year 1595, and will happen again in the years 1614, 1633, 1652, 1671, 1690, and never thereafter, except after the use of the 30 lines of the expanded table of epacts. We have set out the reason for this in the exposition of the Calendar, Chapter 12, Number 14.

[Margin: When epact 25 is to be taken marked with a different character or colour. Likewise when epact 19, written on the last day of December, is in use. How the epacts are investigated after the year 1700.]

But so that you may know how many units beyond 10 are to be subtracted in any given year proposed after the restoration of the Calendar [Latin *in Epacta* [?] *proposito* — a short phrase here, apparently containing a numeral, does not resolve on the foxed and tightly set line and is left unread], so that the epact sought may remain — that is, by how many days after the correction the descent in the lunations was made beyond those 10 of the year of the correction, and (which rarely happens) when an ascent was again made — these twelve verses are to be learned by heart:

Cuius chara bono bonitas, bonitatis amantem Vrit amor, vitij turpia tela
terens. Subiectusque sibi regitur ratione, regitque Quam præfert quoties,
prælia nulla nocent: Nec mentis lædit lethali lumina crimen Kuspide:
iustitiæ iuraque iustus habet: Gaudet habens, gaudens fruitur, felixque
fruendo Excipit excelso dogmata digna Deo. Certa bono cuius bonitas
accommoda paucis: At plures nectit noxia noxa malos. Mens hebet his,
horrensque gemit, frustra que gemendo Flet, donec Diuûm dulcia castra
colat.

[This is a computational mnemonic: each successive word (not each line) is assigned to a centurial year, and the placement of its words on the finger-joints yields the number of units to be subtracted. The Latin words are therefore kept verbatim, since the discussion below counts and positions them by their initial letters. Line 6's opening word is printed "Kuspide" (with a capital K for the classical *Cuspide*).]

The first word, [Cuius], of these verses is assigned to the year 1700; the second, [chara], to the year 1800; the third, [bono], to the year 1900; and so on in turn the rest to the following centurial years, so that the last word, [colat], which is the seventieth, corresponds to the year 8600. For those verses have their use only up to the year 8700 exclusive.

See, then, to which word any given centurial year corresponds. Next, lay out across the inner joints of the left hand (the Thumb being omitted) all the words up to and including the one that corresponds to the given centurial year, in this order: assign to the same joint the words beginning with the same letter, and whenever the immediately preceding initial letter (let us be allowed, for necessity's sake, so to call it) recurs, assign that word again to the immediately preceding joint. For as many joints as you have run through by this method, so many units beyond those 10 of the year of the correction will the descent in the lunations have been made — that is, so many units beyond 10 must be subtracted, so that the epact of the proposed year may remain.

For example. Suppose you wish to know how many units beyond 10 you must subtract in the year 2100 and in the other following years up to the year 2200 exclusive. Since from the year 1700 inclusive up to the year 2100 inclusive there are five centuries, the first five words [Cuius chara bono bonitas, bonitatis] are to be counted out on the joints of the left hand in this order. These two, [Cuius chara], because they begin with the same letter, are to be placed on the first joint; and the other three, [bono bonitas, bonitatis], on the second joint, because they have the same initial letter. Since therefore we run through only two joints, two more units beyond 10 are to be subtracted — namely 12 in all.

Again, in the year 2300 — up to which inclusive, from the year 1700 inclusive, there are seven centuries — the first seven words [Cuius chara bono bonitas, bonitatis] are to be counted out on the hand in this way: so that the first two [Cuius chara] are given to the first joint; the next three [bono bonitas, bonitatis] to the second; the following one alone, [amantem], to the third; and the last one also alone, [Vrit], to the fourth — so that four joints are run through. Four units beyond 10, then, are to be subtracted from the year 2300 inclusive up to the year 2400 exclusive. And since the next word, the eighth, [amor], begins with the same letter A which gave the beginning to the sixth word, [amantem], which precedes the word [Vrit], the eighth word [amor] is to be placed again on the third joint, in which the earlier word [amantem] was placed, so that in the year 2400 only 3 are to be subtracted beyond 10; and so with the rest.

[Margin: What is to be done when the number to be subtracted from the epacts is 30 or greater.]

Now, if the number of units to be subtracted, which the verses supply, together with the 10 days taken away in the year of the correction, should be 30, then nothing is to be subtracted from the epacts found before the correction; rather, the very same epacts will then correspond to the golden numbers as were in use with those same golden numbers before the restoration of the year. But if that same number should be greater than 30, let 30 be cast away as often as can be done, and let the remaining number be subtracted from the epacts found before the correction. For the remainders will become the epacts to be employed at the proposed time.

Now since, after the word [Flet] in the last verse, a transition is made to the letter d — on account of the word [donec], the letter e being omitted in the middle, although in the other cases a transition is always made to the nearest letter — one unit besides must be added to the days to be subtracted in the words after the

word [Flet], from the year 8200 onward; for from e to d the Moon descends by two days, not by one. For example, the word [colat] corresponds to the year 8600, and 30 joints are run through; adding 10 gives 40, and subtracting 30 leaves 10; so 10 would be subtracted from the epacts found before the correction. But because the word [colat] follows the word [Flet], one unit is to be added, so that 11 are then to be subtracted.

At the end of this chapter I shall give another rule, quite ready to hand, for finding the epact of any year whatever.

[Margin: Where the new moons are marked in the Calendar.]

Once the epact of each year has been found, let us show by what art the new moons are to be found from memory by means of it — that is, how one may learn on which days of the months the epact of any given year is set. For on those days the new moons occur, by the usage of the Church, although according to the astronomical calculation they generally fall one day earlier; so that you will not do amiss if you assign any new moon found by the epact to the preceding day, should you wish to have the conjunction of the luminaries not by the usage of the Church, but as it is in the heavens. For since the Church takes greater account of the fourteenth Moon and of the full moon than of the new moon, on account of the solemnities of Easter, the new moons have been deliberately set back by the epacts almost always by one day in the Calendar, as was declared in the exposition of the Calendar, Chapter 11, Number 5, and Chapter 18, Number 4. In the same way, about the time of the correction, the Church celebrated the new moons on those days to which the golden numbers were prefixed.

[Margin: What epact is assigned to the Calends of the months.]

But before all else it must be learned which epacts are set at the beginnings of the months, that is, at the Calends. This you will easily know in the following way. January has at its very Calends the epact *, or xxx. February, xxix. March, again *, or xxx. April, again xxix. May, xxviiij. June, xxviij. And so on, the other months in order always one less; only August, however, has at its beginning these two epacts, xxv and xxiiij, and accordingly the epact xxij is set at the Calends of September, and xxij at the Calends of October, and so on. Therefore, if to the twelve joints of the fingers of the left hand (the Thumb omitted) you assign the 12 months in order — proceeding from the root of the Index finger through the roots of the Middle, Ring, and Little fingers, and making the fifth joint the one that is second on the Index, and the sixth the one that is second on the Middle, and so on, so that the third joint of the Little finger is the twelfth — and if on the first

joint, which corresponds to January, you mentally place the epact * (or xxx), on the second xxix, on the third again * (or xxx), on the fourth again xxix, on the fifth xxviii, and so on always one less, provided that on the eighth, which corresponds to August, you place these two, xxv and xxiii, together, then without great labour you will know the epact set at the Calends of any month. Yet you will perhaps know it more easily if you retain in memory only this: that epact xx is placed on the twelfth joint, that is, at the beginning of December. For if from this epact you proceed by the natural series of numbers, assigning to the eleventh joint, that is, to the month of November, xxj; to the ninth, xxi; and so on (provided that from August, on the eighth joint, you repeat these two epacts, xxiii and xxv, and in February and January you repeat the epacts of April and March, that is, xxix and *), you will have all the epacts assigned to the beginnings of the months, that is, to the Calends. Here it is to be noted that in all the months (February excepted) the same epacts are set at the end as were set at the beginning; in August, however, which has these two epacts, xxiii and xxv, at its very Calends, only the epact xxiii is repeated at the end.

[Margin: All the months except February have the same epact at the beginning and at the end.]

Next, it must also be known that in six months — of which one is August, as we said — these two epacts, xxiii and xxv, are assigned together to the same day. Such are the months holding even places up to and including August, that is, the second, fourth, sixth, and eighth; of this kind are February, April, June, and August; and after August, two months holding odd places, namely the ninth and eleventh, that is, September and November. In these months, indeed, the epact 25 marked with a different colour or character is also written near the epact xxvj, which precedes those two, xxiii and xxv. In August alone the epact 25 of a different form is not written near the epact xxvj, but on the last day of July, where the epact xxvj is placed, preceding the two epacts xxv and xxiii assigned to the Calends of August. But in seven months, namely January, March, May, July, August, October, and December, the same epact 25 of a different colour or character is to be written near the epact xxv; so that the epact 25 of a different form is written twice in the month of July — once on the second day near the epact xxv, then again near the epact xxvj assigned to the last day.

[Margin: Which months have the two epacts 24, 25 assigned together to the same day.]

These six months, then, which have the two epacts xxv and xxiii assigned to the same day, are all those that contain only 30 or 28 days, August alone excepted,

which has 31 days. And so, if you bend down the Index and Ring fingers of the left hand, but raise the other three fingers — the Thumb, Middle, and Little — and count out all the months over these five fingers, beginning from March on the Thumb, the five months of 30 or 28 days will fall on those two bent-down fingers, the Index and the Ring, on which the two epacts *xxiiij* and *xxv* are assigned to the same day, and 25 of a different colour or character near the epact *xxvj*; and if you add August to these, you will have all the 6 months we have named. These same six months are also comprised in this verse:

Bella decent fortes: humiles ieiunia laudent.

[The mnemonic verse "War befits the strong; let the humble praise fasting." The initial letters of its six words — B, D, F, H, I, L — are what matter.]

[Margin: How one may easily tell by the fingers of the left hand which months have 30 days and which 31 or 28, and hence which have the epacts 24, 25 assigned to the same day.]

For the initial letters of the six words of this verse indicate that those months contain the two epacts *xxiiij* and *xxv* written on the same day which occupy in the series of months the same places that those initial letters occupy in the alphabet — namely months 2, 4, 6, 8, 9, 11. For you see in this way that the initial letters B, D, F, H, I, L occupy the same places in the alphabet: namely B the second, D the fourth, F the sixth, H the eighth, I the ninth, and L the eleventh.

With these things premised, you will track down the new moons as follows. Count across through the thirty joints of the left hand (taking two on the Thumb, and the others on the four remaining fingers, of which 12 are the inner joints, 4 are at the fingertips, and 12 are the outer joints), from the current epact inclusive (the new moon of which you are, of course, seeking) up to the epact likewise set at the Calends of the proposed month, assigning nevertheless to the months February, April, June, August, September, and November, on the same joint, these two epacts, *xxiiij* and *xxv*, and on the next joint these two, 25 (marked with a different colour or character) and *xxvj*. For the number of joints you have run through will give the day on which the new moon occurs. This counting, moreover, will be quite easy, even if the current epact is greater than the one set at the beginning of the month. For when you have reached *, the epact of the first day of the month is to be added to the joints you have run through as far as *, so that the day of the new moon may be had. In the months, however, in which the two epacts *xxiiij* and *xxv*, assigned to the same day, stand between * and the epact of the first day, the epact of the first day is to be added, one unit having first been taken away.

[Margin: How the new moons may be found from memory by the epacts, as they are noted in the new Calendar.]

More briefly, you will find the same day of the new moon if you subtract the current epact from the epact of the first day of the month; or, if the former is greater than the latter, from xxx, and then add the epact of the first day to the remainder. For the remaining number, or the number gathered together, with one unit first added, will give the day of the new moon. In those months, however, in which epact xxv, assigned to epact xxiiij, stands between the current epact and the epact of the first day, nothing is to be added to that remaining or combined number.

You will have the same day also if, from the epact set at the beginning of the month inclusive, you count on the joints in reverse order down to the current epact inclusive, assigning the two epacts xxv and xxiiij, likewise these two, 25 (of a different character or colour) and xxvj, to the same day where they occupy the same day in the Calendar. But the earlier methods are readier.

You can also, if you please — especially when the current epact is greater than the one set at the Calends of the proposed month, or much less — count on the joints from the epact of the last day of the month (which is the same, as we said, as that of the first day, February excepted) up to the current epact, assigning the two epacts xxiiij and xxv, likewise 25 and xxvj, to the same joint when they are assigned to the same day. For the number of joints you have run through, with one unit first taken away, subtracted from the number of days of the proposed month, will leave the day of the new moon — that is, the day to which the current epact is assigned.

Furthermore, when epact xix and golden number 19 concur, let the first new moon of the following year be in the month of December on the last day, as was said above; otherwise it would fall on the first day of January.

But let us illustrate the whole matter by examples. With epact x current, if in the month of November — which has at its beginning the epact xxj — you wish for the new moon, count from epact x inclusive, proceeding through xj, xij, and so on, up to xxj inclusive, and you will run through 12 joints. On the 12th day, then, the new moon is marked by epact x in the month of November. Or subtract 10 from xxj, and 11 remain; and with a unit added, they become 12 for the day of the new moon, as before. Or, from epact xxj inclusive, assigned to the Calends, go backward through xx, xix, and so on down to x on the joints, and you will run through 12 joints, as before. Or, finally, count on the joints from epact xxj

inclusive, set at the last day, in natural order down to x, proceeding through xxij, xxiiij, and so on, and assigning the epacts xxiiij and xxv to one and the same day. For you will run through 19 joints, which, if — one unit having first been taken away — you subtract from the 30 days of the month of November, the day 12 of November remains, on which the new moon will occur, as before.

Again, in the month of June, which has at the Calends the epact xxvij, count from epact x up to xxvij, assigning to one and the same joint the epacts xxiiij and xxv, and you will run through 17 joints. On the 17th day, then, the new moon is marked in June. Or subtract epact x from xxvij, and there will remain 17 days for the day of the new moon, as before; because here nothing is added, since epact xxv, assigned to epact xxiiij, is interposed in June between the proposed epact x and the epact xxvij set at the Calends. Or, from epact xxvij prefixed to the first day, count in reverse order on the joints, through xxv, xxiiij, and so on, up to epact x, assigning to one and the same joint the epacts xxv and xxiiij. For you will run through 17 joints, as before. Or, lastly, from epact xxvij placed at the last day of June, count on the joints in natural order down to x, proceeding through xxvij, xxix, *, i, ij. For you will run through 14 joints, which — one unit having first been taken away — if you subtract from the 30 days of the month of June, the day 17 of June remains, on which the new moon will occur, as before.

Again, with epact xxix current in June, 18 joints are run through (assigning the epacts xxiiij and xxv to one and the same joint), from epact xxix through *, i, ij, and so on, up to xxvij, which is the epact assigned to the Calends. Or, if epact xxix be subtracted from xxx and the epact xxvij of the first day be added to the remaining unit, 28 is made for the day of the new moon. For here no unit is added, on account of epact xxiiij assigned, which is placed between the current epact xxix and the epact xxvij of the first day. So too, if the counting be made from epact xxvij of the first day in reverse order, through xxvj, xxv, xxiiij, and so on, up to the proposed epact xxix (assigning the epacts xxv and xxiiij to one and the same joint), we shall run through 28 joints, as before. Finally, if you count from epact xxvij of the last day, through xxvij, xxix, *, and so on, up to the current epact xxix, 3 joints will be run through, which — one unit having first been taken away — subtracted from the 30 days of the month of June, leave 28 for the day of the new moon.

Once the day of the new moon is known, we shall easily detect the age of the Moon on any day, if from the day of the last past new moon inclusive we count the following days up to the proposed day inclusive. Thus, with epact x current, if the age of the Moon on the 3rd of July be desired: since the preceding new moon

occurred on the 17th of June, we shall count from the 17th of June inclusive up to the 3rd of July inclusive, and run through 17 joints. On the 3rd of July, then, which is the proposed day, the Moon will be xvij; and so of the rest.

[Margin: How the age of the Moon is detected.]

But by this method which we have set out, the days of the new moons and the age of the Moon are found according to the usage of the Church, which in this matter does not much trouble itself with the true motions — that is, as the epacts, arranged through the days of the Calendar, exhibit it — although for the most part the case stands otherwise in the heavens. We have adduced the reason for this in the exposition of the Calendar, Chapter 11, Number 5, and Chapter 18, Number 4.

Indeed, if you inquire into the age of the Moon on the last day of the preceding month, you will find on any day the age of the Moon by adding to the proposed day the age of the last day of the preceding month; and if the number gathered exceeds a whole lunation, that lunation is to be taken away, whether it be of 29 days or of 30. Thus, since with epact 1 current the age of the Moon...

[Margin: Which lunations in the Calendar are of 30 days, and which of 29.]

on the last day of November it is 10; if to the 22nd of December you add 10 and cast 29 out of the resulting 32 (for that lunation comprises 29 days), 22 December will be left as Moon 4. Likewise, if to 11 December you add 10, you will find that 11 December is Moon 21; and so on for the rest.

To recognize which lunations of the Epacts contain 30 days and which 29, you must fix carefully in memory those six places where two Epacts, 24 and 25, are assigned to the same day. The lunations beginning at Epact 30, which immediately precede the Epact 24 assigned to the same day as Epact 25 — that is, counting from 24, 23, 22, and the rest of the preceding month up to that 24 which is written against the same day as 25 — contain 29 days, in whatever month this occurs. The exception is the lunations of Epact 25 of a different colour, written against the same day as Epact 26: these do contain 30 days, just as all the other lunations comprise 30 days — except the lunations of that same Epact 25 of a different colour or character, when it is found opposite Epact 25. For these lunations contain only 29 days.

Finally, whenever between a given Epact (whose length of lunation is being sought) and its like in the following month there is interposed the Epact 25 written against the same day as 24, the lunation of the given Epact will contain 29

days — because in that case the like Epact of the following month has been advanced upward by one day out of its proper place. But if no Epact 25 written against the same day as 24 is interposed, the lunation of the given Epact will comprise 30 days. Again, Epact 25 occupying the same day as 24 will always have a lunation of 29 days, because the following month's Epact 25 has climbed one day in the Calendar. The same is to be said of the Epact 25 of a different character set opposite Epact 25: for the following Epact 25 of a different character has likewise been advanced upward by one day, opposite Epact 26. But the lunation of this Epact 25, so advanced (unlike the Epact 25 which occupies the same day as 24), always contains 30 days.

[Margin: What is to be done so that the Epact may be found beyond the year 8699.]

Since we set out above the twelve mnemonic verses for finding the Epacts up to the year 8699 inclusive, anyone wishing to go beyond that year must consult the table of the equation of the Epacts placed in Chapter 12 of the Exposition of the Calendar, and from its letters compose further verses whose words begin with those letters — just as the words of the twelve foregoing verses take their beginning from the letters of the equation table of Chapter 11. It was for this reason that we wrote the two words *krimen* and *kuspide* with a k, although this was done contrary to correct orthography.

[Margin: How, from any Epact, the Epact of the following year may be formed.]

Moreover, once the Epact of any given year has been found, the Epact of the following year is formed with ease: to the former add 11, and from the sum, if it is greater than 30, cast out 30; or, if it comes to exactly 30, take the sign * as the Epact. Only for the Epact of the year in which the golden number is 19 must 12 (not 11) be added, so as to compose the Epact of the following year, in which the golden number is 1. We gave the reason for this in the Exposition of the Calendar, Chapter 12, Numbers 12 and 13. Note, however, that when the Epact so composed comes out as 25, and the golden number of the year in which that Epact is in use is greater than 11, one must take the Epact 25 which is marked with a colour or character different from the others — as we also stated at the beginning of this chapter.

[Margin: How the true Epacts before the year of the correction are to be found.]

Now, if anyone wishes to find by memory the true Epacts from the year 1 of the Lord down to the year 1582 of the correction, the following must be observed. First, since before the correction the solar year was not equalized so as to keep

the equinox in its seat, the Moon had to be equalized every three-hundredth year — namely, after year 1 of Christ, in the year 300 (although in the equation table we wrote the year 320, as being nearer the Council of Nicaea). Then in the year 500, in the time of the Emperor Justinian or thereabouts, the Moon is not equalized, as I taught in the Exposition of the Calendar, Chapter 11, Number 7. After this, in the years 800, 1100, and 1400, the equation is made, as appears in the equation table. The letters assigned to those years in the equation table can be held in memory by this verse:

Nerua Potens Princeps animose bella ciebat.

For the first letters of these words (of which the first three are capitals and the last three lowercase) are those which in the equation table are affixed to the aforesaid years, so that the first word corresponds to year 1 of Christ, the second to 320, the third to 500, the fourth to 800, the fifth to 1100, and the sixth to 1400.

[Margin: How the numbers on the joints of the thumb — those to be added to the golden numbers so as to produce the Epact — are formed.]

Accordingly, whatever place any given letter occupies in the alphabet (starting from lowercase a, and omitting lowercase o together with the capitals I, K, L, O, in such a way that the lowercase letters do not go beyond u), that Epact — of that many units — runs in the expanded table together with golden number 3. If, then, 3 is subtracted from it (adding 30 first if the subtraction cannot be made), the remainder is the number to be added, at the root of the thumb, to the golden number, so as to form the Epact; at the middle of the thumb the number to be placed will be ten units less; and at the tip, again ten units less than at the middle — always adding 30 first when the ten units cannot be subtracted. For example: the capital letter N occupies place 19. Therefore, when the capital letter N is in use, Epact 29 runs with golden number 3, and so 26 must be added to golden number 3 to form Epact 29; at the middle of the thumb 16 must be added, and at the tip 6. Again, since lowercase b is the second letter of the alphabet, Epact 2 runs with golden number 3; so if 3 is taken from Epact 32, there remain 29, the number to be added at the root of the thumb to the golden number, so that the Epact answering to that golden number may be produced; at the middle of the thumb 19 must be added, and at the tip 9 — just as in this present century, before the correction, 10 was added at the tip, 20 at the middle, and 30 (or 0) at the root. By this device, once one knows which letter of the expanded table is in use, the numbers that must be added at the joints of the thumb to the golden numbers, in order to make the Epacts, are easily formed. Thus, since from the year 1582 to the year 1700 the capital letter D is in use, which occupies place 23, Epact 23 runs

with golden number 3; therefore at the root of the thumb, where the golden number 3 is placed, 20 must be added to golden number 3 to make Epact 23, and accordingly 10 must be added at the middle of the thumb and 0 at the tip.

Perhaps more easily, once the number to be added at the root of the thumb to the golden number (so as to make up the Epact) has been found, you will find the other numbers to be added at the tip and at the middle joint of the thumb by addition, in this way. Add 10 to the number that is to be added at the root of the thumb; thus you will have the number to be added at the extreme tip of the thumb. And if to this you again add 10, the number to be added at the middle of the thumb is produced. But 30 must always be cast out of the sum, if it comes out greater than 30.

[Margin: Finding the Martyrology letter.]

Lastly, so that the Martyrology letter may be found by memory for any year, the Epact of that year must first be found. For however many units that Epact contains, so many letters are counted from lowercase a, going through b, c, d, and so on — yet in such a way that lowercase o is omitted, together with the capitals I, K, L, O, and the lowercase letters do not go beyond u, as was said a little before. For the last of these letters is the one that will indicate the Moon's age in the Martyrology for that year. Therefore, whichever letter is the last, that is the Martyrology letter: thus, when the Epact is 1, the Martyrology letter will be capital A [?]; when the Epact is 19, the Martyrology letter will be capital P; and so on.

[Margin: Which Epact is prefixed to any given day of the month.]

Furthermore, those five letters — lowercase o, and the capitals I, K, L, O — which are omitted, will cling in memory by this little verse:

Ornabit Iustos Kv[?] Laudabilis Omnes.

For the first letters of these words (whichever are to be omitted) are those to be dropped in favour of the capitals.

For a fuller understanding of the Epacts, the following points seem to call for explanation. First, just as we gave a rule for recognizing to which day of a given month the current Epact is prefixed, so, conversely, a rule must be given for recognizing which Epact is prefixed to any given day of the month — and it is this. Let the given day be subtracted from the Epact written against the calends of the month (adding 30 first if the subtraction cannot be made); to the remainder add 1, if between the given day and the first Epact of the month there does not

fall an Epact 24. The number so produced will be the Epact assigned to the proposed day. For example, if the 23rd of August is proposed, to whose calends Epact 27 is prefixed: taking 23 from 30 leaves a remainder of 7; the first Epact 24 being associated with Epact 25, there will remain 2 as the Epact prefixed to 23 August. (Here 1 is not added, because the first Epact of the month is 25, associated with Epact 24.) Again, let the 23rd of December be proposed. Since 23 cannot be taken from the first Epact of December, 20, we take 23 from 30, and to the remainder 7 we add the first Epact 20, together with 1 — because between the 23rd and that first Epact 20 there is no Epact 25 written against Epact 24; and so we make Epact 28 the one set against 23 December. And so on for the rest. Thus one must first have ascertained on which days the two Epacts 25 and 24 are prefixed together: these are 5 February, 5 April, 3 June, 1 August, 29 September, and 27 November.

[Margin: How the Moon's age may be found by another method.]

Once the Epact prefixed to a given day is known, we shall by its help recognize the Moon's age on that same day, if we subtract it from the current Epact (adding 30 first if the subtraction cannot be made) and add a further 1 to the remainder — provided that an Epact 25 occupying the same day as 24 does not fall between the Epact of the proposed day and the current Epact which precedes the proposed one (not, however, the one that follows it). For example, with the current Epact 7, if the Moon's age is sought for 27 August, to which Epact 28 is prefixed: since 28 cannot be taken from 7, we take it from 30, and to the remainder 2 we add Epact 7, and a further 1 — because between 28 and 7 no Epact 25 together with 24 is found — and the Moon's age comes out as 10 days. And so on for the rest.

[Margin: Another way of finding the Epact.]

Next, we shall give another most convenient rule for finding the Epact, provided we first know which letter of the expanded table corresponds to the proposed century. This the 70 words of the twelve foregoing verses will supply, for each word corresponds to a single century, beginning from 1700 — so that the word [regitque], which occupies place 16, is to be assigned to the year 3300, and so on for the rest. The initial letters of the earlier words, down to a, are lowercase; the rest, again, are capitals. Now each letter presents the Epact that runs in the proposed century with golden number 3, of as many units as the place the letter itself occupies in the alphabet: thus the letter D gives 23, and so on. If, then, to the Epact due to the letter — which serves the golden numbers that three measures — one adds [multiples of 11], the Epacts due to the golden numbers that three measures are obtained. But if from any such Epact the subtraction cannot be

made, the remainder (after adding 30) will be the Epact of the preceding golden number; while if 11 is added, the Epact answering to the following golden number is produced — casting out 30 whenever the sum is greater than 30.

[Margin: A general rule.]

Example. To the year 3300 corresponds the lowercase letter r, on account of the word [regitque], which occupies place 16. Therefore in that century Epact 16 runs with golden number 3, Epact 19 with 6, and Epact 22 with 9 [?]; with golden number 8 runs Epact 11, and with golden number 10 Epact 33, that is 3 (or the sign *); and so on. Accordingly, when the given golden number is measured by three, its Epact is produced by continuous addition of 11 to the Epact running with golden number 3. But when the given golden number is not measured by three, the Epact of the nearest golden number — greater or lesser — that three does measure is first found, and from it 11 is to be subtracted or added, so that the Epact of the proposed golden number may be drawn out. For instance, if in the same century the Epact of golden number 19 is sought: since the Epact of golden number 18 is 1, adding 11 gives Epact 12 for golden number 19. Likewise, to obtain the Epact of golden number 1, twice 11 must be subtracted from the Epact of golden number 3, [giving Epact 24;] and for the Epact of golden number 2, 11 must be subtracted from the Epact of golden number 3, [giving] Epact 5, which agrees with golden number 2.

CAPVT III.

De Cyclo Solari, siue literarum Dominicalium 28. annorum.

On the Solar Cycle, that is, of the Dominical Letters, of 28 years.

[Margin: What the Solar Cycle is.]

The Solar Cycle, or cycle of the Dominical Letters, is a revolution of 28 years, for the reason that after 28 years the Dominical Letters return in the same order. This cycle of 28 years is produced by the multiplication of 7 by 4: since there are seven Dominical Letters, on account of the seven days of the week, and every fourth year one day is intercalated, so that the order of the seven letters is then interrupted. We shall therefore investigate the Solar Cycle of any year in the following way.

[Margin: The placing of the hundred-years on the joints of the fingers, for finding the Solar Cycle.]

On the three joints of the left thumb, and on the four inner roots of the four fingers, the hundred-years from the birth of Christ our Lord are to be placed, in this way. At the tip of the thumb is set year 0; on the middle inner joint, year 100; on the root, 200. On the root of the index, 300; on the root of the middle finger, 400; on the root of the ring finger, 500; on the middle joint [of the little finger?], year 600; and so on in succession, always returning, after the root of the little finger, to the tip of the thumb.

But so that we are not forced to run through those seven joints so many times, we shall find the seat of any hundred-year, however large, in this way. From the number of hundreds cast out all the 7's, as is customarily done in the check by sevens among the arithmeticians, and to the remainder add 1. The number so produced will give the joint of the proposed hundred-year. Thus, if the year 45600 is given, casting out the 7's from the number of hundreds, 456, leaves 1; 1 added makes 2; therefore the year 45600 will be placed on the 2nd joint, that is, at the middle of the thumb. So too, if the year 1300 is given, casting out the 7's from the number of hundreds, 13, leaves 6; 6 added makes 7; therefore the year 1300 will be placed on the 7th joint, that is, on the root of the little finger. And so on for the rest.

[Margin: The placing of the Solar Cycle on the joints of the fingers.]

Next, since in the year immediately before the birth of Christ the number of the Solar Cycle was 9, this number 9 is to be placed at the tip of the thumb, where year 0 of the Lord was set — that is, the year immediately preceding the birth of Christ. And since the Solar Cycle of 28 years is contained three times in 100 years, with 16 left over, if to the 9 placed at the tip of the thumb one adds 16, the result is 25, to be placed as the number of the Solar Cycle at the middle joint of the thumb; this belongs to the year 100 after Christ, and to all the other hundred-years that fall on that joint. If again to 25 one adds 16, the result is 41; casting out 28 (for that is the number of years in the Solar Cycle) leaves 13, to be set as the cycle on the root of the thumb. By the same reasoning, if to 13 one adds 16, the result is 29; casting out 28 leaves 1, to be set as the cycle on the root of the index. And if to 1 one again adds 16, the result is 17, to be placed as the cycle on the root of the middle finger. To this, if 16 is again added, the result is 33; casting out 28 leaves 5, to be set as the cycle on the root of the ring finger. Finally, if to 5 one joins 16, the result is 21, to be placed as the cycle on the root of the little finger. No further placement is needed, since the same numbers already placed return again in the same order. For if to 21 — the number we set on the root of the little finger — 16 is added, the result is 37; casting out 28 leaves 9, for the cycle already

long since set at the tip of the thumb; and so on. And these seven numbers, set on those seven joints, answer to all the hundred-years that, by the arrangement above, fall on those seven joints.

If this seems too laborious — to arrange the Solar Cycle on those seven joints by adding 16 and casting out 28 — we shall place it more easily by adding four, on alternate joints, in this order. To the 9 that is set at the top of the thumb, add 4, making 13, for the cycle to be located on the root of the same finger (the middle joint being skipped); this indeed belongs to the year 200, set on that same root. For in 200 years the Solar Cycle of 28 years is contained seven times, with 4 left over. And if to 13 one adds 4, [the result is 17,] for the cycle to be set on the root of the middle finger (the index being skipped), where year 400 is placed. Likewise, if to 17 one adds 4, the result is 21, for the cycle to be set on the root of the little finger (the ring finger being passed over), where year 600 is placed. And if 4 is again added to 21, the result is 25, to be placed on the middle joint of the thumb (the ring finger being passed by), where year 800 is set. If to 25 one again adds 4, the result is 29; casting out 28 leaves 1, for the cycle of the root of the index (the lowest joint of the thumb being left aside), where year 1000 is set. And finally, if to 1 one adds 4, the result is 5, for the cycle of the root of the ring finger (the middle finger being passed over), where we placed year 1200. You see, then, that by adding 4 the same numbers are placed on the same joints, though in alternating order, always leaving one joint in the middle.

[Margin: Finding the Solar Cycle.]

Now, from these things the number of the Solar Cycle of any year will readily be elicited. For if some hundred-year is given, its seat must be found among those seven joints we have spoken of, together with the number of the Solar Cycle placed there. But if any arbitrary year is given, the Solar Cycle of the most recently elapsed hundred-year must be found, as we have already taught. Then, since with each single year the Solar Cycle increases by a single unit, as many units must be added to the Solar Cycle of that hundred-year as the given year is after that hundred-year. In this way the Solar Cycle of the proposed year is composed. But if the composed number comes out greater than 28, 28 must be cast out as often as it can be cast out; the remaining number will be the Solar Cycle sought. And if there remain 28 or 0, the Solar Cycle will be 28.

Now you will easily cast out 28 from any number, however large, if you throw out 30 and, for each such casting-out, take back two units, which were of course cast out along with the 28.

You will also do rightly if you first, in the way we have said, cast out 28 from the number of the nearest preceding [hundred-year], if they can be cast out, and add the remaining number to the Solar Cycle of that hundred-year, so as to make up the Solar Cycle of the proposed year.

For example. Suppose the Solar Cycle is sought for the year 1598. Since the seat of the year 1500 is at the middle joint of the thumb, where the number of the Solar Cycle 25 is placed, the Solar Cycle of that hundred-year will be 25. And since from the 98 years given beyond 1500, 30 can be cast out three times, we shall add three times two — that is, six units — to the 8 remaining years, and add the resulting number 14 to the Solar Cycle 25 found; then from the collected number 39 we shall again cast out 30, and for this casting-out add two units back to the remaining number 9, so as to establish 11 as the Solar Cycle of the year 1598. And the same procedure is to be observed in the rest.

[Margin: Finding the Solar Cycle by the precepts of arithmetic.]

The Solar Cycle of any year will also be found by the precepts of arithmetic, in this way. To the years of the Lord add 9, and divide the collected number by 28. The number remaining from the division (taking no account of the quotient, since it merely shows the elapsed revolutions of the Solar Cycle) will be the Solar Cycle of the proposed year. And if nothing is left over from the division, the cycle will be 28. Thus, if the Solar Cycle of the year 1589 is sought, and the collected number 1598 is divided by 28: the division being exact, the remaining number will be 2, for the Solar Cycle of the year 1589. Again, if the Solar Cycle of the year 10967 is wanted: adding 9 to 10967 gives the number 10976; dividing this by 28 leaves 0; therefore the Solar Cycle of that year will be 28. And so on for the rest.

CHAPTER IV. On the Dominical Letter.

**

CAPVT IIII. De litera Dominicali.

Although we do not need the Solar cycle in order to find the Dominical letter of any given year — since we can locate it much more easily without the Solar cycle, as we shall show shortly — nevertheless, so that the method the Church has observed up to now for finding the Dominical letter may be retained in some form, we shall first set out the way in which the Dominical letter of any year is found once the Solar cycle has been determined. (We have in fact made that method somewhat more convenient too, as will be clear if one compares our

procedure with the one the computists handed down before the reform of the year.) We shall carry the matter out as follows.

On the inner roots of the fingers of the left hand (leaving the thumb aside) these five letters are to be placed — C, D, E, F, G — from which the Dominical letter of any year will be found by means of the Solar cycle, in this way. On the root of the little finger is set C; on the root of the ring finger, D; on the root of the middle finger, E; and on the root of the forefinger two letters, F and G, on account of the leap years, which all fall on the joints of the forefinger, as will become clear. These five letters are contained in the following verse line:

Cordati Daud Extinxit Funda Gigantem.

For if you assign the first word, *Cordati*, to the little finger, the second, *Daud*, to the ring finger, the third, *Extinxit*, to the middle finger, and finally the last two, *Funda Gigantem*, to the forefinger, the first letters of those words will give the very letters we said were to be placed on the roots of the fingers.

[Margin: The placing of the five letters on the left hand, for investigating the Dominical letter from the Solar cycle.]

Next, once the Dominical letter is to be found for any proposed year, seek the Solar cycle of that year and count it out over the 28 joints of those four fingers we have named, in this order. The first year of the cycle is assigned to the inner root of the forefinger, the second to the root of the middle finger, the third to the root of the ring finger, the fourth to the root of the little finger, the fifth to the second inner joint of the forefinger; and so on across, yet in such a way that you assign four years of the cycle to the four fingertips as well. By this reckoning the 28th year falls on the outer root of the little finger. Now any year whose Solar cycle falls on the forefinger is a leap year, whereas all the other years, whose Solar cycles fall on the other three fingers, are common years. The joint on which the found cycle-number falls must be carefully noted, for it is there that the Dominical letter is found, both before the reform of the calendar and after. Before the reform, in this way.

[Margin: The placing of the Solar cycle over the 28 joints, for finding the Dominical letter.]

On the finger on which the Solar cycle falls, count following the natural series of the Dominical letters (which are these seven: A, B, C, D, E, F, G), beginning from the letter that, by the first rule of this chapter, falls on the inner root of that same finger, running through the joints — or knuckles — together with the segments

between the joints, and assigning a single letter to each segment and each knuckle alike, then returning after G to A, until you reach the joint of the proposed Solar cycle. For the letter falling on that joint will be the Dominical letter for that year. On the forefinger, however, the intervening segments are to be passed over and two letters assigned to each joint, because the leap years are placed there, to which two letters correspond: of these the latter will indicate the Lord's Day from the beginning of the year up to the feast of St. Matthias, and the former from that feast to the end of the year. And in this way the Dominical letter of any year before the restitution of the year is found.

[Margin: The finding of the Dominical letter from the cycle, before the reform of the year.]

After the reform of the calendar, the Dominical letter is found thus. First, the Dominical letter must be sought exactly as if the calendar had not yet been reformed, by the method we have just handed down. Then, starting exclusively from the letter found, one must count off as many further letters, following the order of the alphabet, as there are surplus units left over when the number seven — the days of one week — is cast out as many times as it can be from the number of days that, up to the beginning of the year's day, have been dropped from the year. That number of days will be learned without much trouble from the following chapter 5. This must be done in such a way that, both in any leap years and in the centennial years that are not leap years — that is, in which the intercalary day is omitted — the counting of the letters is always made from the latter of the letters found. For the last letter of this count will be the Dominical letter after the reform of the calendar, if the year is common; but if it is a leap year, that last letter together with the one immediately preceding it will be the Dominical letters. In centennial years that are not leap years, only the last letter of that count is Dominical, so that with it the immediately preceding letter is not to be taken, as we said must be done in leap years.

[Margin: The finding of the Dominical letter from the cycle, after the reform of the year.]

Let us illustrate the matter with examples. Suppose the Dominical letter of the year 1522 is to be found. The Solar cycle in that year was 19, which falls on the fifth joint of the ring finger — the outer one, nearest the nail; and therefore that year is common, since its cycle does not fall on the forefinger. If, then, starting from the letter D, which is placed on the root of the ring finger, you advance through the natural series of the letters — putting E on the next segment, F on the

second joint, and so on — the letter E will fall on that fifth joint; and therefore E was the Dominical letter for the year 1522.

Likewise, suppose the Dominical letter of the year 1520 is to be sought. The Solar cycle of that year was 17, which falls on the fifth joint of the forefinger, namely the outer one under the nail; and hence the year was a leap year, because its cycle falls on the forefinger. If, then, starting from the letters F, G, which are placed on the root of the forefinger, you count the Dominical letters in alphabetical order — putting the pair A, B on the second joint, the pair C, D on the third, and so on — the pair G, A will fall on that fifth joint; and these were therefore the Dominical letters for the year 1520.

Again, suppose the Dominical letter of the year 1594 is to be inquired. The Solar cycle of that year is 7, which falls on the second inner joint of the ring finger; and therefore that year is common. If, then, starting from the letter D, which is placed on the root of that same finger, you count the Dominical letters through the alphabetical series — putting E on the next segment — F will fall on the second joint, where the Solar cycle 7 is placed; and this would be the Dominical letter, had the reform of the calendar not removed ten days. Therefore, since after casting 7 out of the 10 removed days there remain 3, if after F you run through three more letters — G, A, B — then B will be the Dominical letter for the year 1594.

In the year 1604 too the Dominical letter is found thus. The Solar cycle is 17, which falls on the fifth joint of the forefinger, namely the outer one nearest the nail, on which fall the pair of letters G, A, which would be the Dominical letters

**

— were it not that 10 days had been removed. If, then, you count from the latter letter A three more letters, B, C, D, and with the last, D, you also take the preceding letter C — because the given year is a leap year, since its cycle falls on the forefinger — the Dominical letters will be C, D.

Likewise, suppose the year 1813 is given. The Solar cycle is 2, which falls on the root of the middle finger, where the letter E is placed. But because by then 12 days will have been removed, after E these five letters — F, G, A, B, C — must be counted, since, casting 7 out of 12, five remain. Therefore the Dominical letter then will be C.

Lastly, you will seek the Dominical letter for the year 1800, which is not a leap year, in this way. The Solar cycle is 17, which we said falls on the fifth joint of the

forefinger, where the pair of letters G, A are placed. And since up to the beginning of the year 1800 eleven days will have been removed — for on the feast of St. Matthias the twelfth day will first be removed, since the intercalary day is then omitted — we shall count after A four more letters, B, C, D, E, because, casting 7 out of 11, four remain. Therefore E alone will then be the Dominical letter, since the year 1800 is common — that is, it is passed without an intercalary day — and therefore the immediately preceding letter D is not to be taken, as we prescribed must be done in leap years.

But we shall find the Dominical letter far more easily, both before and after the reform of the calendar, taking no account whatever of the Solar cycle that corresponds to the proposed year, and using only seven joints of the left hand: of these let the first be at the tip of the thumb, the second at its middle, the third at its base, the fourth at the root of the forefinger, the fifth at the root of the middle finger, the sixth at the root of the ring finger, and the seventh at the root of the little finger. First, then, before the reform of the calendar, the centennial years are to be distributed over those seven joints of which we have just spoken. On the tip of the thumb is set the year 100; on its root, the year 200; on the root of the forefinger, the year 300; on the root of the middle finger, the year 400; on the root of the ring finger, the year 500; on the root of the little finger, the year 600. Then again, on the tip of the thumb, the year 700, and so on — as was said in Chapter 3 concerning the Solar cycle — until you reach the year 1500, which falls on the middle joint of the thumb. For the remaining centennial years that follow are now after the reform of the year, and therefore require a different arrangement, as we shall say shortly.

[Margin: The placing of the centennial years over the 7 joints, for finding the Dominical letter without the cycle, before the reform.]

Next, on those same 7 joints are to be counted all the years after any given centennial — those they call the *expanded* years — in this order. On the tip of the thumb is set the year 1; on the middle joint, the year 2; on the base, the year 3; on the root of the forefinger and of the middle finger alike, the year 4 (4, 4), because the fourth year is a leap year and therefore requires two letters. On the root of the ring finger, the year 5; on the root of the little finger, the year 6. Then, returning to the thumb, on its tip is placed the year 7; on its middle and its root, the year 8 (8, 8), because the eighth year too is a leap year. On the root of the forefinger, the year 9; on the root of the middle finger, the year 10; on the root of the ring finger, the year 11; on the root of the little finger and the tip of the thumb, the year 12 (12, 12), because the twelfth year too is a leap year. And so on:

all 100 expanded years will be arranged in order on those 7 joints — provided you remember to place on two joints the twofold numbers of the leap years, such as the years 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, and all the rest that the number four measures, which are indeed to be assigned to two joints; thus: 4·4, 8·8, 12·12, 16·16, 20·20, &c.

But since it would be long and difficult to count out by this device all the expanded years up to the proposed year after a given centennial — especially if the given year is not far from the following centennial — we shall use the very device we employed above in Chapter 3, which was of this kind. Casting 30 out of the number of the year given after the centennial, as often as it can be done, and taking back two units for each casting-out, we shall add these units to the remaining years — those, that is, that are left over after casting out 30 — and the resulting sum, which is never greater than 28 (for if it should ever be greater, 28 is to be cast out), we shall reckon out over those 7 joints of the left hand, beginning from the tip of the thumb, the leap-year numbers (say 4, 8, 12, &c.) being always assigned to two joints, as we said above. For example, suppose the year given after some centennial is 85: since 30 can be cast out twice, we shall take back 4 units — that is, twice two — and add them to the remaining 25 years that are left after casting 30 out of 85 twice; then, casting out 28, we shall reckon out the resulting number — that is, the number of the Dominical cycle — arriving where the seat of the year 85 always is.

Again, since it is also troublesome to run through the individual years up to 28 over those 7 joints, one can easily, in that counting, avoid carelessly assigning to two joints the same twofold numbers of the leap years, by using this shortcut. The years taken four at a time — namely 4, 8, 12, 16, 20, 24, 28 — are assigned to two joints in continuous order, but beginning from the middle finger and the forefinger, through the root and middle joint of the thumb, then through the tip of the thumb and the root of the little finger, and likewise through the roots of the ring finger and the middle finger, and so proceeding onward toward the thumb — that is, in the order opposite to the counting we prescribed for the expanded years. For the counting of the expanded years, beginning from the top of the thumb, proceeds through its middle and so on toward the little finger, whereas the years-by-fours proceed in the opposite order, through the two joints of the middle finger and forefinger and on toward the thumb, the beginning being taken from the roots of the middle finger and forefinger and proceeding toward the thumb.

This numbering of the years-by-fours is easily done thus. Placing the tip of the right forefinger on the root of the left forefinger [?], and the tip of the right middle finger on the root of the left middle finger, we set there 4·4. Then, placing the tip of the right middle finger on the root of the left thumb, and the tip of the right forefinger on the middle of the left thumb, we shall locate there 8·8. Again, placing the tip of the right forefinger on the root of the left little finger, and the tip of the right middle finger on the tip of the left thumb [?], and the tip of the right middle finger on the root of the left ring finger [?], we shall place on these two joints 12·12. After this, placing the tip of the right middle finger on the root of the left middle finger, and the tip of the right forefinger on the root of the left thumb, we shall set on these two roots 16·16. Likewise, placing the tip of the right middle finger on the root of the left forefinger, and the tip of the right forefinger on the root of the left thumb, we shall place on these two roots

**

20·20. Moreover, placing the tip of the right middle finger on the middle of the left thumb, and the tip of the right forefinger on the tip of the left thumb, we shall set there 24·24. Finally, placing the tip of the middle finger of the right hand on the root of the little finger of the left hand, and the tip of the right forefinger on the root of the ring finger of the left hand, we shall set on these two roots 28·28. And in this way all the numbers of the leap years will be placed in their proper seats — namely on those joints on which they fell by the earlier counting.

But if the given year is some non-leap year among the expanded years, we shall seek its seat on those same 7 joints in this way. Having found the seat of the immediately preceding leap year, by the device we have described, we shall assign the first year after that leap year — that is, the one that follows next in order after the leap year whose seat has been found — to the joint that follows next in the numbering of the expanded years we have just been using; likewise the second year after the same leap year to the next following joint — in the order, that is, opposite to the one we used in the placing of the years-by-fours. For instance, suppose the given year is 19: we shall first find the seat of the year 16 (the leap year immediately preceding the year 19), on the roots of the ring finger and the middle finger. We shall assign the year 17 (the first after that same leap year 16) to the root of the little finger, the year 18 (the second after that same leap year 16) to the tip of the thumb, and the year 19 (the third from the same leap year 16) to the middle joint of the thumb. And so you will say that the seat of the year 19 is on the middle of the thumb. Likewise, suppose the given year is 14: we shall first find the seat of the year 12 (the leap year immediately preceding), on

the tip of the thumb and the root of the little finger; then the year 13, which is the first after the leap year 12, we shall assign to the middle of the thumb, and the year 14, the second from the same leap year 12, to the root of that same thumb; and there we shall say is the seat of the year 14. And so with the rest.

But we shall also proceed very conveniently in this way in finding the seats of the 28 expanded years. As many times as the number four is contained in the given number of expanded years — the cycle of 28 years having first been cast out, if that can be done — so many units are to be added to that same number of years. For if we reckon the collected number out over those 7 joints, beginning from the tip of the thumb and going through its middle, its root, and so on, with no number assigned to two joints, the counting will end on the joint that is the seat of the given year: yet in such a way that in a leap year the joint found is the latter of the two owed to that year, and that therefore the joint immediately preceding must be assigned to it as well, proceeding toward the tip of the thumb, and from that (if the joint should happen to be the tip of the thumb) proceeding toward the root of the little finger. For example, take the year 27. Since the number four is contained in 27 six times, we shall add 6, and thus we shall briefly reckon the sum, 33. Casting out 7 as often as it can be done, we shall count the remaining 5 units, beginning from the top of the thumb; and the fifth unit will fall on the root of the middle finger. There, then, is the seat of the year 27. Likewise, suppose the given year after some centennial is 76: casting out 30 twice, we shall add to the remaining number 16 twice two units — that is, 4 — so as to complete the number 20. And since 4 is contained in 20 five times, we shall add 5 to 20 to make 25; and this composite number, 25, we shall reckon out as before — that is, casting out 7 as often as it can be done, we shall count the remaining 4 units over the joints, the beginning being taken from the tip of the thumb, and the last unit will fall on the root of the forefinger. Therefore the year 20, since it is a leap year, will have its seat on the roots of the forefinger and the thumb. For to the root of the forefinger the preceding joint must also be joined, namely the root of the thumb, on account of the leap year, as has been said.

With these things established, we shall investigate the Dominical letter before the restitution of the year as follows. Having found, on those 7 joints, the seat of the centennial year that immediately precedes the proposed year — as we taught just above — we place the letter B on that seat. Then, having also noted the joint that is the seat of the proposed expanded year after the given centennial, we proceed from the letter B, which we placed on the seat of the proposed centennial, in the natural order of the letters — through C, D, E, F, G, A — toward the tip of the thumb, and from there we go on to the root of the little finger, then to the root of

the ring finger, and so on, until we come to the joint that is the seat of the year given after that centennial. For the letter falling on that joint will be the Dominical letter for that year — a single letter, if the year is common; but if it is a leap year, a double one, two letters namely falling on the two joints assigned to the leap year, of which the latter in the alphabet (that is, the one that occurs later in the count made over the joints) will indicate the Lord's Day in the earlier part of the year up to the feast of St. Matthias, and the former in the later part of the year.

But if the Dominical letter is to be inquired for some centennial year itself, one must count from the letter B, which we placed on the seat of that centennial, in the same natural order — through C, D, E, F, G, A — toward the tip of the thumb, as far as the roots of the little finger and the ring finger. For the letters falling on these roots will be the Dominical letters for that leap-year centennial. For since, after the roots of the ring finger and the little finger, the counting of the expanded years passes at once to the top of the thumb, where the first of the expanded years is placed — so that the year following the centennial, by the counting of the letters from B (which is placed on the seat of that same centennial), is Dominical — it necessarily follows that the Dominical letters for the year after that centennial are those two that follow next, by that same natural-order counting of the letters, onto the roots of the little finger and the ring finger. These two roots, in the counting of the letters, follow next after the tip of the thumb in the natural series; but in the counting of the expanded years they immediately precede that same tip of the thumb. We see this happen with other years as well. For if, for example, the Dominical letter of some year falls on the root of the middle finger, the Dominical letter of the immediately preceding year must fall on the root of the forefinger — a root that, in the natural-order counting of the letters, follows next after the root of the middle finger, but in the counting of the expanded years precedes that same root of the middle finger. [Margin: The easiest finding of the Dominical letter before the reform, without the Solar cycle.] [Margin: Onto which joints the Dominical letters of the centennial leap years fall.] These things, then, are clear.

For example, let the Dominical letter be found for the year 400 after Christ's birth. Since this year has its seat on the root of the middle finger, we shall place there the letter B; and so, by the natural order, [we proceed,] with the letter C placed on the root of the forefinger, the letter D on the root of the thumb, [and so on,] until we reach the roots of the little finger and the ring finger, where we said the Dominical letters of the centennial years are to be found — where the letters G, A

fall, of which the latter, A, was Dominical in the earlier part of the year, and the former, G, in the later part.

Likewise, suppose the Dominical letter of the year 1580 is to be sought. The seat of the year 1500 is on the middle of the thumb; there, then, we shall place the letter B. And since the year 80 — that is (casting out the cycles of 28 years) the year 24 — is a leap year, and falls on the middle and the tip of the thumb, we shall count from the letter B, placed on the middle of the thumb, as far as the tip of the thumb,

the thumb, which, together with the middle of the thumb, is the seat of the proposed year; and the letter C will fall on this extremity. Therefore, since the letter B is set at the middle of the thumb, the letters B and C were the Dominical letters in the bissextile year 1580 — of which the latter, C, was in use at the beginning of the year, and the former, B, after the feast of St. Matthias [S. Matthiæ].

Finally, suppose the Dominical letter is to be investigated for the year 1347. The seat of the year 1300 is at the base of the little finger. There, then, the letter B must be fixed; and if from it we count up to the middle of the thumb, where the year 47 is placed — that is (casting out the cycle of 28 years) the year 19 — we shall find there the Dominical letter G, which indicated the Sunday for the year 1347.

[Margin: The placing of the centennial years on the 7 joints, for finding the Dominical letter without the Cycle, after the correction. (*Collocatio annorum centesimorum in 7. articulis, ad inueniendam literam Dominicalem sine Cyclo post correctionem.*)]

In exactly the same way we shall find the Dominical letter after the correction of the calendar — provided only that we arrange the centennial years after the reformed year, together with the letter B which always accompanies those years, differently on the thumb and on the bases of the fingers of the left hand. For the seats of the expanded years [anni expansi] remain exactly the same.

The placing of the centennial years after the restored calendar is as follows. On the top of the thumb are set all the centennial years that are first after the centennial bissextiles. On the lower part of the same thumb (skipping the middle joint) are placed all the centennial years second after the centennial bissextiles. At the base of the middle finger (also omitting the base of the index finger) are put all the centennial years third after the bissextiles. Finally, on the base nearest the ring finger have their seat all the centennial bissextile years.

Here you see that the seat of the centennial years on the top of the thumb — those first after the bissextiles — follows the seat of the centennial bissextiles (which is at the base of the ring finger) not immediately, but with the base of the little finger left empty; just as the other non-bissextile centennials likewise do not follow one another immediately, but always with one joint skipped. Only the seat of the centennial bissextiles follows immediately upon the seat of the centennials that are third after the bissextiles, with no empty joint left between. Therefore, once it is known whether the proposed centennial is bissextile, or first, second, or third after the bissextile, there will be no need to run through all the joints repeatedly, as had to be done for the centennials before the correction of the calendar; rather its seat among the four enumerated joints will be at hand at once.

In what way we can easily distinguish the bissextile centennial years from the non-bissextile ones, we shall show in the following chapter. Meanwhile, since the year 1600 is bissextile, its seat will be at the base of the ring finger; and consequently the year 1500 (as far as concerns the expanded years after the correction), which immediately precedes it, will be like some centennial third after the bissextile, since the next following centennial year — namely 1600 — is bissextile. Therefore the year 1500 (as regards the expanded years after the restoration of the year) has its seat at the base of the middle finger. But the year 1700, first after the bissextile, will be placed on the top of the thumb; the year 1800, second after the bissextile, at the base of the thumb; the year 1900, third after the bissextile, at the base of the middle finger; then the year 2000, being bissextile, will again have its seat at the ring finger; and the year 2100 at the extremity of the thumb. And so, in succession, you will place the other following centennials on the same joints, always leaving one joint empty — except for the bases of the middle finger and the ring finger, between which no joint is left empty.

[Margin: The finding of the Dominical letter without the Cycle, after the correction, is also by far the easiest. (*Inuentio literæ Dominicalis sine Cyclo, post correctionem, longe etiam facillima.*)]

Therefore, if after the correction the seat of the proposed centennial year is found together with the letter B, and the joint is noted on which the year given after that centennial falls — and if from that letter B, toward the extremity of the thumb, and thence toward the little finger and ring finger, the following letters are run through in their proper order until one reaches the joint of the year proposed after the centennial — then in that joint the Dominical letter will be found, just as

before the restoration of the year. But if the Dominical letter of some centennial year is sought, one must count from the letter B placed in the location of that centennial, through the following letters, up to the bases of the little finger and of the ring finger. For there the Dominical letter will be found, as before the correction: double, indeed, in each base, if the given centennial is bissextile; but single, in the base of the little finger alone, if it was a common year.

For example: suppose the Dominical letter of the year 1590 is to be sought. Since after the correction it has its seat at the base of the middle finger — as do all the other centennials that are third after the centennial bissextiles (for the following centennial, 1600, is bissextile, and therefore has its seat at the base of the ring finger, which, as we said, is immediately preceded by the seat of the centennials that are third after the bissextiles) — we shall place the letter B on that same base of the middle finger. Then, because 30 is contained three times in the 90 years given after the centennial, with nothing left over, we shall take three times two units, that is, 6; and if we count these off across the seven joints of the left hand of which we spoke, beginning from the extremity of the thumb — yet in such a way that we assign 4 and 4 to the bases of the index finger and of the middle finger — the sixth unit will fall on the base of the little finger. This is also clear from the shortcut given above. For if we place 4 and 4 at the bases of the middle and index fingers, and 5 at the base of the little finger — then if, from the letter B set at the base of the middle finger (where the seat of the year 1500 is), we count the Dominical letters according to the order of the alphabet, advancing toward the thumb, we shall find at the base of the little finger, that is, at the seat of the expanded year 90, the letter G, which was the Dominical letter for the year 1590.

Again, let the year 1800 be proposed, which has its seat, together with the letter B, at the base of the thumb. But since the year 1800 is not bissextile, its Dominical letter must be found at the base of the little finger, as was said. If, then, we count from the letter B placed together with the year 1800 at the base of the thumb, the other letters in their natural order toward the extremity of the thumb, up to the base of the little finger, we shall find that the letter E is Dominical for the year 1800.

Likewise, suppose the year 2000 is given, which has its seat together with the letter B at the base of the ring finger, since it is bissextile (being the fourth after the bissextile 1600); and consequently its Dominical letters are to be found at the bases of the ring finger and the little finger. If, then, we reckon from the letter B placed at the base of the ring finger (where the year 2000 is), the other letters in natural sequence toward the thumb, we shall find at the bases of the little finger

and ring finger the letters A and B, which will be Dominical for the year 2000. But since the letter B is placed at the ring finger, it is clear that the letter A stands before it, at the little finger. Therefore, since the year 2000 is bissextile, it is established, without any further counting, that A and B are the Dominical letters in any bissextile centennial year.

Next let the year 2143 be proposed. Since the year 2100 is placed at the extremity of the thumb together with the letter B (being the first centennial after the bissextile 2000), and the year 43 — that is (casting out 28) the year 15 — falls on the base of the index finger: if we count from the letter B placed on the thumb-tip together with the year 2100, the other letters in alphabetical order, passing at once from the top of the thumb to the little finger, and thence to the ring finger and to the index finger, we shall meet there the Dominical letter F, for the year 2143.

Finally, let the year 4752 be given. Since the year 4700, third after the bissextile, has its seat with the letter B at the base of the middle finger, and the expanded year 52 — that is (casting out 28) the year 24, a bissextile — falls on the middle of the thumb and its extremity: we shall find in these joints (if the counting of the letters is begun from the letter B placed at the base of the middle finger, where the year is 4700) the Dominical letters E and F, for the given year 4752.

CAPUT V.

De Annis Bissextilibus, Communibusque tum centesimis, tum non centesimis, & numero dierum ob æquationem anni Solaris vsque ad datum quodcunque tempus exemptorum.

(Chapter V. On Bissextile and Common Years — both centennial and non-centennial — and on the number of days removed, on account of the equation of the solar year, up to any given time.)

[Margin: How non-centennial bissextile and common years may be recognized. *(Anni non centesimi bissextilis, & communes qua ratione sciuntur.)*]

You will recognize the non-centennial bissextile and common years as follows. Given any year, cast out all the thousands and hundreds, and likewise from the rest cast out the number 20 as many times as you can. Then from the remaining number cast out 4 as often as it can be done. For if nothing remains, the proposed year is bissextile; if 1 is left over, it will be the first after the bissextile; if 2 remain,

the second after the bissextile; if finally 3, the third after the bissextile. In the same way, if after casting out all the 100s or 20s nothing remains, the year is bissextile.

For example: let the year 1589 be proposed. Casting out the years 1500 (which are centennial) and 20 from the remaining 89 as many times as can be done, and from the residual 9 years subtracting all the 4s, there remains 1. Therefore the year 1589 is a common year, and the first after the bissextile.

Likewise, suppose the year 5960 is given. Casting out 5900 (that is, the centennial years) and 20 from the remaining 60, nothing is left. Therefore the year 5960 is bissextile.

Finally, let the year 6456 be given. Casting out the centennial years, that is 6400, and 20 twice from the remaining 56, and 4 four times from the remaining 16, nothing remains. Therefore the given year 6456 is bissextile.

[Margin: In what manner the centennial bissextile and non-bissextile years may be known. (*Anni centesimi bissextiles, & non bissextiles quo pacto cognoscantur.*)]

By the same method we shall distinguish the centennial bissextile years from the non-bissextile ones. For, given any centennial year, let there be cast out all the tens of thousands (to speak in the manner of the arithmeticians) — that is, the years 10000, 20000, 30000, 40000, 50000, 60000, 70000, 80000, 90000, 100000, 200000, and finally all the years measured by the number 10000, such as all those found beyond the fourth place of their number (proceeding from right toward left); for all these are bissextile. And with the number of the remaining centennial years — which will always be less than 100 (since 100 centennials make 10000) — one proceeds as if they were simple, expanded years, and not centennials. For a centennial year is bissextile when, after casting out all the 20s or 4s from the number of thousands and hundreds (without regard to the tens of thousands), nothing remains; if 1 is left over, it is the first centennial after the bissextile; if 2, the second; and if 3, the third. But if the given year has, as its first four figures — proceeding from right to left — 0000, it too will be bissextile.

Therefore, if a number of centennials, however large, written out in its figures, is proposed, one need consider only the number expressed by the two figures found in the fourth and third places — that is, in the place of thousands and of hundreds — and one must proceed with that number as was said concerning non-centennial years. For instance, if the year 27000 is given, the number 70 is to be noted, since the figure 7 occupies the place of thousands and the figure 0 the place of hundreds. But if the given year is 30900, account is to be taken of the

hundreds-figure 9 alone, since the thousands-figure 0, placed before it in this way, adds nothing. Thus (so that the force of this precept may be seen even in the largest numbers of years) in the year 946700000 nothing is to be considered, because in the place of thousands and of hundreds the figure 0 stands; rather, the proposed year is bissextile. Finally, in the year 6789200, account must be taken of the number 92, and so on.

For example: let the year 1900 be given. Since it is less than 10000, we shall cast out nothing, but only the number of thousands and hundreds expressed in it is to be noted — that is, the number 19. From it, if all the 20s are removed, 19 remain; and if from these all the 4s are taken away, 3 remain. Therefore the year 1900 is a common year; and though it is a centennial, it is the third after the bissextile centennial.

Let the year 30400 also be given. Casting out 30000 — that is, considering only the hundreds-figure 4, since the thousands-figure is 0 — if all the 4s are cast out of 4, nothing is left. Therefore the year 30400 is bissextile.

Likewise, suppose the year 407600 is given. Casting out 400000, there remain 76 centennials, which alone are to be considered. From these, if 20 is cast out, 16 remain; and if all the 4s are taken away from these, nothing is left. Therefore the proposed year 407600 is bissextile.

Finally, let the year 580600 be offered. Casting out 580000, there remain 6 centennials. And casting out 4 once from 6, there remain 2. Therefore the given centennial year 580600 is a common year, and the second after the bissextile centennial.

Very conveniently, therefore, the correction of the calendar falls in a year contained between 1500 and 1600 — such as the year of the correction, 1582 — since in this way the centennial bissextile and common years retain the rule of the non-centennial bissextile and common years.

[Margin: By what art it may be known how many intercalary days have been omitted up to any centennial year inclusive. (*Quot dies intercalares omissi sint vsque ad quemcunque annum centesimum inclusiue qua arte cognoscatur.*)]

Now, how many intercalary days — beyond those 10 removed in the year of correction — have been omitted up to any given centennial year inclusive, you will find out in this way. Having subtracted 1600 from the number of the proposed centennial year, divide the remaining centennial years by 4. Multiply the quotient number (as the arithmeticians say) by 3 (because in every span of

400 years three intercalary days are omitted), and to the resulting number add the remainder of the division, if there is any (since the units of the remaining number, which will always be fewer than 4, are common centennial years); and you will produce the number of days removed up to that time, beyond the 10 days that were removed in the year of correction.

For example: if someone should wish to know how many days have been removed from the time of the correction up to the year 6790 inclusive, let him subtract 1600 from 6700 (for only the centennials are reckoned), so that there remain 5100 — that is, 51 centennial years; and if these are divided by 4, the quotient will be 12, with remainder 3. If, then, the quotient 12 is multiplied by 3, and to the produced number 36 are added the 3 centennial years left over from the division, there will result 39 days subtracted up to the year 6790 inclusive; and if to these are added the 10 days removed in the year of correction, there will be in all 49 days.

Thus, from the year of correction up to the year 8800 inclusive, 54 days will have been removed. For, taking away the years 1600 from 8800, there remain 7200 years — that is, 72 centennial years — which, if divided by 4, give a quotient of 18, with nothing left over from the division. Multiplying, then, the quotient 18 by 3, the number of days removed becomes 54. And adding the 10 days of the year of correction, 64 days in all will have been removed.

Perhaps we shall attain the same result more conveniently if we divide all the centennial years by 4 without subtracting 1600, and from the quotient (keeping meanwhile the remainder of the division, if there is any) we take away 4 — because 4 is contained four times in the 16 centennials, that is, in the 1600 years, which we ought to have taken away. For if we multiply the remaining number by 3, and add to the resulting number the remainder of the division, we shall gather the number of days removed beyond those 10 days of the year of correction.

For example: let the year 8800 be proposed. Dividing the 88 centennials by 4, the quotient becomes 22. Taking away 4, there will remain 18; and these, multiplied by 3, produce 54. So there will then be that many days removed beyond those 10 of the year of correction — the same as we had found by the earlier way.

Again, let the year 634700 be proposed. Dividing the 6347 centennial years by 4, the quotient becomes 1586, and 3 will remain. Taking away 4 from the quotient, and multiplying the remaining number 1582 by 3, there is produced the number 4746; and adding the 3 that were left over, the number of days removed becomes 4749 — besides those 10 that were removed in the year of correction.

And this knowledge of the number of removed days is altogether necessary if we wish to investigate the Dominical letter by means of the solar cycle — namely, so that we may understand how many letters are to be counted after the Dominical letter has been found, as we taught at the beginning of chapter 4. This knowledge of the same days is likewise most necessary in order that the celestial motions may be computed from the astronomical tables for any year given after the correction of the calendar.

CAPUT VI.

De Festis Mobilibus.

(Chapter VI. On the Movable Feasts.)

[Margin: The placing of the 7 Dominical letters on the fingers, for finding the movable feasts. (*Collocatio 7. litterarum Dominicalium in digitis ad festa mobilia inuenienda.*)]

To find the movable feasts, both before and after the restoration of the calendar, all 7 Dominical letters must first be placed on each of the 4 fingers of the left hand (the thumb omitted), and again on the little finger of the right hand, in this way. On the inner base of each of those 5 fingers is put D; on the second joint, E; on the third, F; on the fourth — that is, at the tip — G; on the fifth, which is on the outer side under the nail, A; on the sixth, B; on the seventh, C. This placement is contained in the following verse:

Donec Erat Fortis, Gens Africa Bella Ciebat.

For if, beginning from the inner base, you run through all 7 joints of each of those five fingers, and assign to each joint the successive words of that little verse, the first letter of each word will show the letter that is placed on the corresponding joint.

[Margin: The placing of the 30 epacts on the left hand, for finding the movable feasts. (*Collocatio 30. Epactarum in sinistra manu, ad festa mobilia inuenienda.*)]

Next, in order that the movable feasts after the correction of the year may be found (for we shall deal a little later with finding them before the restored year), the 30 epacts must be arranged on the left hand in this order. On the palm of the hand is placed epact xxij. On the inner base of the index finger, xxij. On its second joint, xxj; and so on in succession, keeping the epacts in retrograde order — yet in such a way that from the outer base of each finger you jump at once to

the inner base of the following finger: that is, from the seventh joint of the index to the first of the middle finger, and from the seventh of this to the first of the ring finger, and finally from the seventh of this to the first of the little finger. This procedure being observed, epact xv will fall on the inner base of the middle finger, epact viij on the base of the ring finger, and epact j on the base of the little finger. Further, on the penultimate joint of the little finger must also be placed epact 25 (marked with a different colour or character), together with epact xxvj. But on the last joint, the two epacts xxv and xxiiij, as is done in the calendar.

But perhaps the same epacts will be placed on the hand more easily in the natural order of the numbers, if the beginning is made from the outer last joint of the little finger; and there you place epacts xxiiij and xxv together, and proceed toward the penultimate joint, and the antepenultimate joint, and so on, up to the inner base of the index finger and the palm of the hand: that is, on the penultimate joint of the little finger you put xxvj and 25; on the antepenultimate, xxvij; at the tip, 28; and so on in succession. For in this way epact xxij will at last fall on the palm of the hand, where the beginning was made before.

But we shall discover the seat of any epact far more easily in this way. To the proposed epact let 6 be added; and the accumulated number, if it is less than 30 — or else, if it is not less, the number by which that accumulated total exceeds 30 — is to be placed on the lower part of the left thumb. Then, if from this number inclusive a counting is made according to the natural series of the numbers, through the palm of the left hand and through the joints, both inner and outer, of the index and the other fingers, up to 30 — or, if the epact is the 25 of a different colour or character, or xxiiij (each of which climbs one day higher in April, and therefore has its lunation, begun in March, of 29 days), up to 29 — this counting will end at the seat of the proposed epact.

For instance, if to epact x we add 6, they make 16. Setting, then, 16 at the base of the thumb, 17 on the palm of the hand, 18 at the base of the index, and so on, the number 30 will fall on the penultimate joint of the middle finger, which is the outer one. There, then, is the seat of epact x.

Likewise, if to epact 25 (marked with a different character or colour) 6 is added, they make 31, which number exceeds 30 by one unit. If, then, we place 1 at the base of the thumb, and 2 on the palm of the hand, and 3 at the base of the index, and so on, the number 29 will fall (when...

(For when the epact is 25, marked in a different colour or character, the count must be carried only as far as 29, because its lunation, beginning in the month of

March, contains only 29 days) — into the penultimate joint, that is, the sixth joint of the little finger [Auricularis]. There, then, is the place of epact 25, which is customarily written in a different colour or character.

Again, if 6 is added to epact xxiiij, the result is 29. So if we place 29 at the base [radix] of the thumb [Pollex], the number 30 will fall into the palm [vola] of the hand. Epact xxiiij will therefore be set in the palm of the hand.

Finally, if 6 is added to epact xxiiij, the result is 30, a number that exceeds 30 by nothing. So if we set 0 at the base of the thumb, 1 in the palm, and 2 at the first joint of the index finger [Indicis], the number 30 will end — for when the epact is xxiiij, the count too must go only as far as 29, since its lunation likewise, beginning in March, is of only 29 days — at the last joint of the little finger. There, then, is the seat of epact xxiiij.

Thirdly, the roots of the movable feasts [radices festorum Mobilium] must be carefully committed to memory: that is, the days of the months before which the movable feasts can never be celebrated, though they are sometimes celebrated on those days themselves. The principal movable feasts are Septuagesima, Ash Wednesday [dies Cinerum], Easter [Pascha], the Lord's Ascension, Pentecost, and the feast of Corpus Christi. The intervals between these feasts never change among themselves; the same number of days is always interposed. The Lord's Advent [Aduentus Domini], however, even though it too is a movable feast, follows a different reckoning, as will be said below. [Margin: What the movable feasts are, and what their roots are.] The root of Septuagesima, then, is 18 January; of Ash Wednesday, 4 February; of Easter, 22 March; of the Lord's Ascension, 30 April; of Pentecost, 10 May; and of Corpus Christi, 21 May. For feasts of this kind can be celebrated on these days of their roots, but not before them. These roots will perhaps be more easily retained in memory by the following verses:

*Octodecim Ianus. Februus sed quatuor optat. Viginti duo Mars: Triginta
poscit Aprilis: Bis quinque at Maius: Ter septem postulat idem.*

For these roots correspond to the feasts named above in the order recited, so that the first root belongs to the first movable feast, that is, Septuagesima; the second to the second, that is, Ash Wednesday; and so on.

Accordingly, if you are about to find any one of those movable feasts in any given year, look first into which joint the epact of that year falls, according to the arrangement set out above. Then look into which joint the dominical letter of that same year is placed, after the epact has already been fixed in its own place, in the

order we prescribed at the beginning of this chapter — with this proviso: that if the dominical letter falls into the same joint as the epact, the same letter is to be taken in the corresponding joint of the next finger. [Margin: Finding the movable feasts.] The same is to be understood of the two letters of a leap year [Bissextilis]. For if either of them occupies the same joint as the epact, the same two letters are to be taken in the corresponding joints of the following finger. Thirdly and last, count from the root of the proposed feast the days of the months, starting the reckoning from the base of the index finger (placing, of course, at the first joint of the index finger the number of the root of the proposed feast-day), at the second the next-greater number, and so on in succession — provided you remember that January has 31 days, February 28 both in the common and in the leap year (as far as the present business is concerned), March 31, April 30, and May 31 — as far as the joint in which the dominical letter has been placed after the seat of the current epact. For the day of the month at which the reckoning ends will be the day on which the proposed feast is to be celebrated. [Margin: How the Hebrew Passover, or the 14th of the Paschal moon, is found.] Here it is also to be noted that, in the search for Easter, the day of the month that falls in the joint of the current epact is the day on which the 14th of the Paschal moon, or the Hebrew Passover [Pascha Hebræorum], occurs. So if anyone wants the Hebrew Passover or the 14th Paschal moon, he must count from the root of Easter — that is, from 22 March — as far as the joint in which the current epact has its seat.

Moreover, in a leap year all the movable feasts must be investigated by means of the later dominical letter [litera Dominicalis posterior], which is of course the one in use after the feast-day of St. Matthias; but under this rule: that to the day found for Septuagesima one day is always to be added, whereas to the day of Ash Wednesday one day is likewise added only when it has been found in the month of February and not in the month of March. [Margin: What is to be done in a leap year on account of the two dominical letters.] For since before St. Matthias's day the earlier dominical letter is in use — the one that is of course later in the alphabet, and therefore follows by one day in the calendar the later dominical letter, which holds the earlier place in the alphabet — it comes about that Septuagesima and Ash Wednesday, before that same feast-day of St. Matthias, are celebrated one day later than is indicated by the later dominical letter then current (that is, by the one earlier in the alphabet). For this reason one day must then be added to the day found by means of the later letter. But after St. Matthias's feast, although the later letter is now in use, a further day must nonetheless then be added to the day of Ash Wednesday found in the month of February, on account of the intercalary day added on the sixth of the Calends of March, which is not written in the calendar. For it is because of this intercalary

day that 24 February is called 25 in the calendar, 25 is called 26, 26 is called 27, and here 28, and here 29. From this it follows that Ash Wednesday, found for example on 26 February by the later dominical letter, is in reality the 27th in the counting of the days; and so of the rest. But if Ash Wednesday falls in March in a leap year, nothing is to be added to the day found, just as neither at the feast of Easter nor at the other feasts following it, because then both the later dominical letter is in use and the days of the months answer to their proper numbers, since the intercalary day has been added to February — so that the first day of March is called the first, the second the second, and so on. Why in a leap year the feasts must be sought by the later letter has been declared in Canon 6 of the Gregorian Calendar, which is prefixed to the explanation of that same calendar.

By way of example: let all the movable feasts of the year 1589 be investigated, in which, by the foregoing rules, the epact is xiiij and the dominical letter A. And since epact xiiij has its seat in the third joint of the middle finger [*digitus Medius*], and letter A, occupying the joint next below it, is placed in the fifth joint of the same finger, all the movable feasts will fall into this fifth joint of the middle finger. So if from the root of Septuagesima — that is, from 18 January inclusive — you count, beginning from the base of the index finger and proceeding toward the second joint and the others, until you reach the fifth joint of the middle finger, you will find that Septuagesima falls on 29 January. But if in the same way, beginning from the root of Ash Wednesday, that is, from 4 February, you count until you reach the same fifth joint of the middle finger, you will find that Ash Wednesday was celebrated on 15 February; and so of the rest.

Likewise in the year 1605, in which the epact is x, falling into the penultimate joint of the middle finger, which is the sixth. And because the dominical letter B of that year falls into that same joint, letter B is to be taken in the same sixth joint, the ring finger [*Annularis*]. For into that joint all the movable feasts of that year will fall. Therefore, if you count the number from the root of Easter — that is, from 22 March, beginning at the first joint of the index finger — you will find in the penultimate joint of the ring finger the day 10 April, on which Easter will be celebrated in the year 1605.

Again, in the leap year 1588 the epact was ij, falling into the last joint of the ring finger, which is the outer one. The dominical letters were C, B. And since letter B, the later one in use (although it is the earlier in the alphabet), by which all the feasts are to be traced, as we have said, immediately precedes that last joint of the ring finger, the same letter B is to be taken in the penultimate joint of the little finger. You will find that Septuagesima falls on the 13th, but, one day added, on

14 February. And you will find that Ash Wednesday falls on 2 March, and therefore that nothing is to be added; and so on.

Next, in the leap year 1596 the epact is j, falling on the inner root of the little finger. The dominical letters are G, F, of which F, the later in use, falls into the third joint of the same little finger. So if from the root of any feast you count as far as that joint, you will find that Septuagesima falls on 10 February. With unity added, then, you will find that it was celebrated on the 11th. And you will find that Ash Wednesday falls on 27 February; with unity added, then, you will say that it was celebrated on the 28th — which in the calendar is indeed the 27th, but is called the 28th on account of the intercalary day added on the sixth of the Calends of March. [The month here as printed reads "Maij"; recte "Martias" (Calends of March).]

Furthermore, in the year 1535 the epact is 25, marked with a colour or character different from the others, but having its seat in the penultimate or sixth joint of the little finger. The dominical letter F, which falls after the epact, into the third joint of the little finger of the right hand. Hence Septuagesima will fall on 17 February, Ash Wednesday on 6 March, Easter on 21 April, and so on.

Besides, in the non-leap year 1700 the epact is ix, whose seat is in the last joint of the middle finger, that is, on the outer root. The dominical letter C falls into that same joint, so that letter C is therefore to be taken in the last joint of the ring finger. So if the reckoning is made from the root of the Ascension — that is, from 30 April — the Lord's Ascension will be found on 20 May.

To these, in the leap year 2096 the epact is v, having its seat at the tip [extremitas] of the ring finger. The dominical letters are A, G; and the movable feasts are all to be sought by the later of them, G — which is later, that is, in use, but not in the order of the dominical letters, since in the order of the letters A immediately follows G, and not the reverse, G following A. But since letter G falls at the same tip of the ring finger, the same letter G is to be taken at the tip of the little finger, in which place you will find that Septuagesima falls on the 11th — that is (with unity added) on 12 February; Ash Wednesday on the 28th, that is (with unity added) on 29 February, which in the calendar is the 28th; Easter on 15 April; the Lord's Ascension on 24 May; Pentecost on 3 June; and finally the feast of Corpus Christi on 14 June.

Finally, in the leap year 1612 the epact is xxvij, whose seat is in the fifth joint of the little finger, which is the outer one, nearest the nail. The dominical letters are A, G, of which A, the earlier in use, falls into that same joint, and the later, G, is set

before that joint at the tip. Hence the same letters are to be taken in the following finger — that is, in the little finger of the right hand — and the movable feasts are to be sought by the later, G, which falls at the tip of the little finger of the right hand. For you will find at the top of the little finger that Septuagesima is to be celebrated on 18 February, that is (with unity added) on the 19th; Ash Wednesday on 7 March; Easter on 22 April; the Lord's Ascension on 31 May; Pentecost on 10 June; and Corpus Domini on 21 June. And the same procedure is to be observed in all other years.

Furthermore, we shall very conveniently find these same movable feasts without any arrangement of the epacts and dominical letters on the hand, in the following way. Let the Paschal new moon [Nouilunium Paschale] be found, as we taught in Chapter 2. To the day of the new moon let 13 be added, so that the 14th Paschal moon [Luna xiiij Paschalis] is obtained. Then let the day of the week on which the 14th moon falls be investigated — which will be done with the greatest ease by the means we shall hand down in Chapter 9. Thirdly, see how many days are counted after the day of the 14th moon up to and including the Sunday. For the number of these days added to the day of the 14th moon will give the day of Easter. [Margin: How Easter and the other feasts may be found otherwise, without the epacts on the hand, etc.]

Example. When the epact is vij and the dominical letters are c, b in some leap year: epact vij subtracted from 30, which is ascribed to the Calends of March, leaves 23; and with 1 added, the result is 24, for the day of the Paschal new moon. With 13 added, the result is 37 — that is (casting off the 31 days of March) 6 April — for the 14th moon, falling on a Wednesday, after which 4 days are counted up to Sunday. Therefore Easter will be celebrated on 10 April. Again, with epact xxvj current and the dominical letter A, the new moon will be found on 4 April and the 14th moon on 17 April, falling on a Monday, after which six days are counted up to Sunday. Therefore Easter will be celebrated on 23 April.

But in order that any other movable feast may be found, Easter must first be investigated, as has been said. Then it must be seen how many days after the root — that is, after 22 March — it is celebrated, observing that in March 9 days remain over. So, by adding the day of Easter, if it is celebrated in April, the number of days after the root of Easter will be had. And since the other feasts are the same number of days distant from their roots, if you add that number of days to the root of each feast, you will have the day on which it ought to be celebrated. In leap years, however, unity must further be added to the day of Septuagesima and of Ash Wednesday — yet in such a way that, when Ash Wednesday would be

the 29th or greater, unity is not added, but 28 is subtracted, so that the remainder gives Ash Wednesday in March. For example: in the latter example Easter fell on 23 April. With 9 added, its distance after the root — that is, after 22 March — becomes 32 days; and these added to the root of Septuagesima, that is, to 18 January, make 50; and, the 31 days of January removed, there will remain 19 February for Septuagesima. In the same way Ash Wednesday will be found on the 36th — that is, subtracting the 28 days of February, on 8 March. The Ascension on the 61st of April — that is, taking away the 30 days of April and the 31 of May, on 1 June; and so on. But in the former example, of a leap year, Easter is distant from its root by 19 days; and this distance, added to the root of Septuagesima, makes Septuagesima fall on the 37th of January — that is, on 6 February — and, with 1 added, on the 7th. Ash Wednesday on the 23rd of February — that is, with 1 added, on the 24th, namely on the vigil of St. Matthias; and so on. [Margin: The placing of the golden numbers on the hand.]

Now, if in place of the epacts the golden numbers [aurei numeri] are arranged on the left hand, all the movable feasts from the Council of Nicaea up to the year of the restitution of the calendar will be found in the same way as was said above concerning the epacts. And the golden

numbers will be placed on the left hand thus. In the palm of the hand 16 is set. With 8 added, and 19 cast off from the sum of 24, the golden number 5 remains, to be located at the inner root of the index finger, after the palm of the hand. With 8 added again, the golden number 13 is produced, for the third joint of the index finger, the second being left empty. For in this arrangement the lesser golden number always follows the greater at the next joint, but the greater follows the lesser not at the next but at the joint beyond — which must be carefully observed, so that all the golden numbers are set in their proper places. With 8 added again to golden number 13, set at the third joint of the index finger, and 19 cast off from the sum of 21, the golden number 2 is produced at the tip of the index finger, since it is set at the first joint of the index finger, which is less than 13. Again, with 8 added to golden number 2, the golden number 10 is produced, greater than the preceding, and therefore to be placed at the sixth joint of the index finger (the fifth being left empty). If to this 8 is again added, the golden number 18 is produced, again greater than the preceding 10, and therefore to be placed at the root of the middle finger (the last joint of the index finger being omitted as empty). With 8 further added to golden number 18, set at the root of the middle finger, and 19 taken from the sum of 26, there remains the golden number 7, which, being less than 18, is to be placed at the next joint of the middle finger, that is, at the second. And by this device all 19 golden numbers will

be placed on the left hand, provided only that you remember that the lesser is to be located next after the greater, but the greater after the lesser not next, but with one joint left empty. Now that golden number is always less than the preceding one which remains after casting off 19 — which happens when, from adding 8 to the preceding golden number, a sum greater than 19 is produced. But that golden number is greater than the preceding one when 19 is not to be cast off from the sum produced by adding 8 to the preceding golden number — which happens only when that sum is not greater than 19.

The same golden numbers will also be arranged on the left hand in this way. When the preceding golden number is greater than 11, subtract 11, and let the remaining number be set at the next following joint; but when it is not greater than 11, add 8, and the number produced is [set in the palm of the hand. If the number thus produced] is greater than 11, cast off 11, and the lesser remaining number 5 is to be located at the next joint, that is, at the root of the index finger. With 8 added to 5, the golden number 13 arises — not at the second joint of the index finger, but at the third, the second being left empty. Subtracting 11 again from 13, the number 2 remains, the lesser, to be set at the next joint, that is, at the tip of the index finger; and so of the rest.

Moreover, we shall find the seat of each golden number on the left hand by means of the epact which corresponded to that golden number before the correction year, even if the preceding golden numbers are not yet located, in this way. To the epact which is elicited from the given golden number before the restitution of the year — as was handed down at the beginning of Chapter 2 — let 3 be added; and the number collected, if it is less than 30 (or, if it is not less, the number remaining after 30 is cast off), assign to the thumb; the next-greater number to the palm of the hand; the next-greater in turn to the root of the index finger; and so on in succession, until you reach 30. For into whatever joint the number 30 falls, there will be the place of the golden number. Thus if the seat of golden number 8 is sought, to which epact 28 corresponded before the correction of the year, let 3 be added to epact 28, to make the sum 31. With 30 removed, 1 remains. So if you set 1 on the thumb, 2 in the palm of the hand, 3 at the root of the index finger, and so on in succession, 30 will fall into the outermost joint of the little finger. There, then, is the seat of golden number 8.

Likewise, because before the restored year epact x_j corresponded to golden number 1, if to this epact you add 3 and set the collected number 14 on the thumb, 15 in the palm of the hand, 16 at the first joint of the index finger, 17 at

the second, and so on in succession, the number 30 will fall into the first joint of the ring finger. There, then, is the seat of golden number 1; and so of the rest.

Accordingly, if from the root of any movable feast, set at the first joint of the index finger, you count the following days of the month, until, after the seat of the current golden number, you reach the joint where the proposed dominical letter [Margin: Finding the movable feasts by the golden numbers, before the correction of the year.] is set, you will find in that joint the day of the month on which the feast was celebrated. For example, if you wish to know on what day Easter was celebrated in the year 1450, whose dominical letter was D and golden number 7, having its seat in the second joint of the middle finger, you will do it in this way. Since the dominical letter D, following the second joint of the middle finger, is set at the root of the ring finger, if from the root of Easter, set at the first joint of the index finger — that is, from 22 March — you count as far as the root of the ring finger, you will find that Easter in the year 1450 was celebrated on 5 April. And the same reckoning holds in the other cases.

CAPUT VII.

De Aduentu Domini.

[On the Advent of the Lord.]

On what day of the month the first Sunday of Advent is celebrated, we shall learn most expeditiously as follows. Since the beginning of the Lord's Advent is always celebrated on that Sunday which is nearest to the feast of St. Andrew, or falls on the feast itself, it is manifest that the first Sunday of Advent can be celebrated three days before that feast and three days after. So if you keep in memory that letter F is prefixed to the Calends of December (which, however, Chapter 9 will easily teach), you will clearly understand that letter G is prefixed to the second day of December, and letter A to the third day; but to the last day of November, which is the 30th, letter E is affixed, which of course precedes letter F ascribed to the first day of December; while letter D is affixed to the 29th, letter C to the 28th, and finally letter B to the 27th. And hence we shall understand that Advent is to be celebrated on the day to which the dominical letter of the proposed year is prefixed [Margin: Finding the first Sunday of Advent.] — which will be evident if from letter F, ascribed to the Calends of December, you go back as far as D. Thus, since in the year 1598 the dominical letter was D, which fell on 29 November (which will be evident if from letter F ascribed to the Calends of December you go back as far as D), you will say that Advent in that year began on 29 November,

which precedes St. Andrew's holy day. And so, as you see, it is enough if you keep in memory that letter F is prefixed to the Calends of December.

Caput VIII — On the number of Sundays between Pentecost and Advent

[Margin: How many Sundays there are between Pentecost and Advent in any given year.]

You will find the number of Sundays between Pentecost and Advent most briefly and easily by this method. See how many Sundays there are after Easter up to and including the feast of St. George, which falls on 23 April — that is, how many times the number 7 is contained in the days after Easter up to and including that day sacred to blessed George. That is the number of Sundays to be added to 24 in order to complete the count of Sundays between Pentecost and Advent. But if no Sunday is found after Easter up to and including that feast of St. George — that is, if there are fewer than 7 days after Easter up to St. George's day, or if Easter itself falls on that feast day — then there will be only 24 Sundays. And finally, if Easter is celebrated after St. George's day, there will be only 23 Sundays between Pentecost and Advent.

For example: if Easter falls on 22 March, you will look for the number of Sundays between Pentecost and Advent thus. After Easter — that is, after 22 March — up to and including St. George's day, or 23 April, there are 32 days: 9 to the end of March (for when 22 is subtracted from the 31 days of March, 9 remain), and another 23 in April up to the 23rd. Since the number 7 is contained four times in 32 days, 4 Sundays must be added to 24, so that the whole count of 28 Sundays between Pentecost and Advent is completed.

Likewise, if Easter falls on 3 April, there are 20 days after Easter — that is, after 3 April — up to the 23rd, since when 3 is taken from 23, 20 remain. And because the number seven is contained twice in 20, 2 Sundays must be added to 24. There will then be 26 Sundays, and so on. Exactly the same reasoning holds in the other cases.

Caput IX — From what day of the week any day of the month is to be named, in any proposed year, whether it is the first day or not

[Margin: What Dominical letter is written against the Kalends of each month.]

In the first place, you must learn what Dominical letter is set in the Calendar against the first day of each month. This you will easily recognize from the twelve words of these verses:

Astra dabit Dominus, gratisque beabit egenos Gratia Christicolæ feret aurea dona fideli.

For the first word, *Astra*, is assigned to the first month, that is, January; the second, *Dabit*, to the second, February; and so on in order — with this reservation, that the fourth word, *Gratisque*, is taken as one word only. Now the first letter of each word is the Dominical letter that is set in the Calendar against the Kalends of the month which that word represents. Thus January has the letter A written against its very Kalends, February D, March likewise D, April G, May B, June E, July G, August C, September F, October A, November D, and December F.

[Margin: What Dominical letter is written against the Kalends of each month.]

Once the first Dominical letter of any month is known, you will easily understand from what weekday that month begins. For if on the joints of the fingers you count, starting inclusively from the Dominical letter of the proposed year, the following letters in alphabetical order up to the letter that is set against the Kalends of the given month (returning, if need be, from the letter C to the letter A), the number of joints you have run through on the fingers will indicate the number of the weekday from which the proposed month takes its beginning.

[Margin: From what weekday each month begins in any given year.]

For example: in the year 1592, a leap year, in which the Dominical letters are E, D — since the letter A is set against the Kalends of January, on account of the first word *Astra* assigned to the first month — if from the current Dominical letter E (for this one is in use up to St. Matthias's day) you count the other letters in the natural order of the alphabet up to A, in this way, E, F, G, A, you will run through four joints. January therefore begins from the fourth weekday, that is, from Wednesday. For if the letter E indicates Sunday, then F will signify Monday, or the second weekday; G, Tuesday, that is, the third weekday; and A, the fourth weekday, or Wednesday.

Next, because the letter D is written against the Kalends of February — on account of the second word *Dabit*, which belongs to February — if from the same current Dominical letter E you count the other letters up to D, in this way, E, F, G, A, B, C, D, seven joints of the fingers will be run through, and therefore the month of February takes its beginning from the seventh weekday, that is, from Saturday;

for the seventh weekday is usually called the Sabbath, just as the first is called Sunday.

Again, because the month of March begins from the Dominical letter D, as the third word *Dominus* denotes, and the later Dominical letter D is then in use, you will pronounce the first of March to be a Sunday, or the first weekday.

Lastly, since May begins from the letter B, because the fifth word *Beabit* corresponds to it, and the later Dominical letter D is then in use, you must count from D up to B, in this order, D, E, F, G, A, B; and since six finger-joints are run through, the first day of May will be Friday, or the sixth weekday.

[Margin: What Dominical letter is written against a proposed day of any month, and from what weekday that same day is to be named.]

Now if from the number of any day in any month whatever you cast out 7 as often as possible — in such a way, however, that if nothing remains you take 7 as the remainder — and if, starting inclusively from the first Dominical letter of the proposed month, you count on the finger-joints the following letters in natural order (returning from G to A) until you have run through as many joints as there are units in that remainder, then the last letter (the one that falls, of course, on the last joint counted) will be set against the proposed day of the month. And so, if you again count from the current Dominical letter the following letters up to the letter assigned to the proposed day (the one just found), you will recognize, in the same way as you recognized the weekday of the first day of the month, the weekday from which the proposed day of the month takes its name.

For example: in the same year 1592, whose Dominical letters are E, D, suppose someone wishes to know what Dominical letter is set against 22 February — on which the Church celebrates the Chair of St. Peter at Antioch — and what weekday it then is. Since the word *Dabit* indicates that the letter D is set against the Kalends of February, and since when 7 is cast out three times from 22 there remains 1, the first letter of the month, D, must be counted on one single joint, thus: D. Therefore the letter D is assigned to 22 February. Accordingly, since the earlier Dominical letter E is then in use, if we count inclusively up to D the 7 letters E, F, G, A, B, C, D, we shall find that the proposed day, 22 February, is the seventh weekday, that is, the Sabbath.

Again, I wish to know what letter is set against the sixth of December, which is sacred to St. Nicholas. Since the last word *Fideli* shows that the letter F is set against the first day, we shall count from F six letters, thus: F, G, A, B, C, D —

because 7 cannot be cast out from 6. Therefore D is set against the sixth day, and consequently that day will be a Sunday, since the Dominical letter is then D.

Likewise, if the question concerns 21 December, sacred to St. Thomas: when all the sevens are cast out, nothing remains. Therefore 7 letters must be counted from F, in this order, F, G, A, B, C, D, E, so that E falls on the 21st. And if the count is made from the Dominical letter D, thus, D, E, you will find that this day is the second weekday.

Next, let it be asked what letter is set against the anniversary day of St. Matthias, which falls on 24 February, and what weekday it is. Count from the first letter of the month, namely D, three letters in this order, D, E, F (for when 7 is cast out from 24 as often as possible, namely three times, 3 remain), for the last, F, is assigned to the 24th. But since the later letter D is now to be used, if you count from D up to F, in this way, D, E, F, you will find that the feast of St. Matthias — that is, 24 February, which is then really the 25th on account of the added intercalary day — falls on the fourth weekday, that is, on Tuesday.

[Margin: What to do in a leap year, when the proposed day falls after the feast of St. Matthias.]

By the same reasoning, if in a leap year any day whatever in February after the feast of St. Matthias is proposed, you must seek the letter set against the day whose number is next smaller than the number of the proposed day, and the weekday must be investigated by means of the later Dominical letter. For instance, if the 28th is proposed, you must seek the letter of the 27th, because the intercalated day is not written in the Calendar. So you see that just above, for the feast of St. Matthias, the letter of the 24th was sought, even though in a leap year that feast is celebrated on the 25th.

Finally, let it be asked on what weekday the anniversary day of the Apostle St. James — that is, 25 July — falls. Since the seventh word *Gratia* shows that the letter G is written against the Kalends of July, and since when 7 is cast out three times from 25 there remain 4, four letters must be counted from G, thus, G, A, B, C; for the last, C, is set against the 25th. If then, from the later Dominical letter D, which is then in use, the count is made up to C, just found, in this order, D, E, F, G, A, B, C, you will find that the feast of St. James — that is, 25 July — falls on the Sabbath, or the seventh weekday.

The reason why 7 must be cast out from the number of the proposed day as often as possible is that after the 7th day of any month, and after the 14th, 21st, and 28th, the same letter recurs that is set against the Kalends.

Caput X — On the Nones, Ides, and Kalends

The first day of each month takes its name from the Kalends. For on the first of January we usually say "on the Kalends of January"; on the first of February, "on the Kalends of February"; and so in the rest. But all the other days are customarily marked from the Nones or Ides of the same month, or from the Kalends of the following month — in such a way that the day which is four days distant, inclusively, from the Nones, Ides, or Kalends (that is, with two days interposed) is to be called "the fourth before the Nones," "the fourth before the Ides," or "the fourth before the Kalends," counting inclusively.

Now in order to know how to name correctly any day of the proposed month from the Nones, Ides, or Kalends, you must diligently commit to memory the days on which the Nones and Ides of each month fall. These can easily be grasped from the number of the Nones and Ides of each month. For since 4 months — March, May, July, October — have 6 Nones, while the other 8 months — January, February, April, June, August, September, November, December — have only 4, the Nones fall in the first 4 months on the 7th, but in the other 8 on the 5th. For to the number of the Nones must be added the first day, which takes its name not from the Nones but from the Kalends, so that the day of the Nones is obtained. And since each month has 8 Ides, if 8 be added to the day of the Nones, the Ides fall in the first 4 months on the 15th, but in the other 8 on the 13th. And to aid the memory these two little verses have been composed:

Maius sex Nonas, October, Iulius, & Mars. Quatuor at reliqui: dabit Idus quilibet octo.

[Margin: How many Nones and Ides each month has, and on what day both the Nones and the Ides fall.]

[Margin: How the days of the months are to be named from the Nones, Ides, and Kalends.]

And so, before you name a proposed day of any month from the Nones, Ides, or Kalends, first see whether that month is one of the first 4 or not. If it is one of them, and the proposed day is the 7th, you will call that day the Nones; but if the given day is the 15th, you will call it the Ides of that month. If, however, the offered day comes before the 7th, or after it but before the 15th, subtract its number, first diminished by a unit (namely the number of the day that precedes the proposed day in the Calendar), from 7 or from 15, and name the remaining number from the Nones or Ides, according as the proposed day falls before the

15th. But if the given day comes after the 15th, subtract its number, first diminished by a unit (namely the number of the day that immediately precedes the given day in the Calendar), from the number of days of the whole proposed month — provided you have first added a unit to the day of that month (namely the first day of the following month, on which its Kalends fall) — and name the remaining number from the Kalends of the following month.

You will observe exactly the same procedure in the other 8 months, provided that in place of the 7th for the day of the Nones and the 15th for the day of the Ides you take the 5th and the 13th, on which days the Nones and Ides of those months fall.

For example: let 3 March be named — the day which precedes the Nones, the 7th. Take away 2 (the number one less than 3, the number of the proposed day) from 7; 5 remain. So you will call 3 March "the fifth before the Nones of March," that is, the fifth day before the Nones of March, counting inclusively.

Again, let the 10th of the same month be given. Since the Ides fall on 15 March, and the proposed 10th is after the Nones and before the Ides, take 9 from 15, so that 6 remain. You will therefore call the 10th "the sixth before the Ides of March."

Furthermore, let 23 June be offered. Since the Ides have passed, and the Kalends of the following July fall on the 31st day counted from the Kalends of June (because June has 30 days), we shall take 22 from 31, so that 9 remain. On 23 June, therefore, one must say "the ninth before the Kalends of July."

Lastly, let the given day be 10 August. Since the Nones have passed, but the Ides fall on the 13th, if 9 be taken from 13, 4 will remain. You will then say "the fourth before the Ides of August."

Note, however, that when the remaining number is 2, one must not say "the second before the Nones," or Ides, or Kalends, but "the day before the Nones," or Ides, or Kalends (*Pridie*).

[Margin: How the days of the months may be recognized from the Nones, Ides, and Kalends.]

Now if a day is proposed named from the Nones or Ides of some month, or from the Kalends of the following one, and we wish to know what day of the month it is, the number of the naming, less one, must be subtracted from the number of the day on which fall the Nones, the Ides, or the Kalends of the following month

— according as the day is named from the Nones, Ides, or Kalends. The remaining number will give the day of the month that is sought.

For example: suppose certain letters are dated "the fifth before the Ides of January." Since the Ides of January fall on the 13th, the number 4 (one less than the number of "the fifth before the Ides") must be taken from 13, so that 9 remain. The day on which the letters were written, therefore, was 9 January.

Likewise, suppose other letters are dated "the day before the Nones of October." Since the Nones of October fall on the 7th, we shall take away 1 (the number one less than that of "the second before the Nones," which is expressed by *Pridie*) from 7, and there will remain 6 October.

Lastly, suppose other letters are written "on the eighteenth before the Kalends of July," a day which lies in the month of June. Since the Kalends of July fall on the 31st day counted from the Kalends of June — June having 30 days — if 17 be subtracted from 31, 14 remain. Those letters, therefore, were written on 14 June, namely the day immediately after the Ides.

Caput XI — On the Indiction

[Margin: What the Indiction is.]

The Indiction is a cycle of 15 years, from 1 up to 15; when this cycle is finished, one returns again to 1. And since the Indiction is frequently used in papal Bulls and diplomas and other public documents, it will not be out of place to explain in a few words by what method the Indiction of any year can be found; this is done as follows.

[Margin: The placing of the hundred-years on the hand, to find the Indiction.]

On the tips of the thumb, index, and middle finger of the left hand, the centurial years must first be arranged, in this way. On the thumb place 0; on the index, 100; on the middle finger, 200. Again on the thumb, 300; on the index, 400; on the middle finger, 500; on the thumb, 600; and so on.

When a large number of centurial years is proposed, you will readily find the seat of that century thus. Cast out 3 from the number of the proposed century as often as possible — which is easily done if you collect the figures expressing the centurial number into one sum in order, always casting out 3, just as arithmeticians cast out 9 in the proof by nines. For if, after the removal of all the 3s, you add 1 to the remaining number, the centurial year must be placed on the finger indicated by the number produced (which will never be greater than 3).

For example, if the year 4716 is given: from 47 (the number of centurial years), when 3 is cast out, there remain 2. (This casting-out is done thus: cast 3 from the figure 4, and 1 remains; added to the figure 7, it makes 8; and when 3 is cast out, 2 are left.) If you add 1 to these, they make 3. On the third finger, therefore, that is, on the middle finger, the year 4700 must be placed. Again, let the year 1589 be given. When 3 is cast from 15 (namely from the number of centuries), 0 remains; adding 1 makes 1. Therefore on the first finger, namely the thumb, the year 1500 must be placed.

[Margin: The placing of the three Indictions, to find the Indiction of any year.]

Next, on the same three finger-tips the three numbers of three Indictions must be set, by this reasoning. Since Christ the Lord was born after the 3rd year of the Indiction, the Indiction 3 will be placed on the thumb, where the year 0 is located — that is, the year immediately preceding the birth of Christ. And since the cycle of 15 years of the Indiction is contained six times in 100 years, with 10 remaining, if we add 10 to 3, the Indiction 13 is produced, to be placed on the second finger. Adding 10 again to the next Indiction, 13, the sum 23 is obtained; and if from it the cycle of the Indiction — that is, 15 — be cast out, the Indiction 8 will remain, to be placed on the third finger. And these Indictions belong to those centurial years which, by the arrangement above, are placed on those finger-tips. These three numbers of the Indictions, which we have set on the finger-tips of the years, are comprehended in this little verse:

Da tria primo, alij tredecim, deinde octo sequantur.

For by this verse it is indicated that 3 is assigned to the first finger, 13 to the second, and 8 to the third.

Now if to the Indiction of any centurial year — which is placed on the finger on which that century is set — you add the extra years given after that century, and from the sum cast out 15 as often as possible, you will produce the Indiction of the proposed year.

For example: let the year 1589 be given. Since the year 1500 falls on the thumb, or the first finger (because, when 3 is cast from 15, the number of centurial years, 0 remains, and with 1 added it becomes 1), the Indiction 3, set on that same thumb, belongs to the year 1500. If to it the extra years 89 are added, and from the sum, 92, all the 15s are cast out, there will remain the Indiction 2 for the year 1589.

Again, for the proposed year 4716, which falls on the middle finger, or the third — because when 3 is cast from 47

Computus Ecclesiasticus — Pars Prima (concl.) and Pars Secunda (opening)

(Caput XI, De Indictione, concluding — worked examples continued.)

that is, of the number of the hundreds of years, 2 remain; and if 1 is added to these, they make 3.) There the Indiction 9 is found. If the 16 expanded years are added to this, the sum 24 is collected. From this, once the 15-year cycle of the Indiction has been cast out, the Indiction 9 of the proposed year 4716 remains. And so for the rest.

We shall also readily find the **Indiction** by the rules of arithmetic, if we add 3 to the years of the Lord and divide the resulting number by 15. For the number left over from the division will be the Indiction sought; or if nothing remains, the Indiction sought will be 15. For example, suppose the Indiction is sought for the year 1589. Adding 3, and dividing the resulting 1592 by 15, the number 2 remains, which is the Indiction for the year 1589. Again, suppose the Indiction of the year 3462 is wanted. Add 3 to the 3462 years, and divide the resulting number, 3465, by 15: here 0 will remain. Therefore the Indiction of the year 3462 will be 15. The same procedure is to be observed in all remaining cases. [Margin: Finding the Indiction by the rules of arithmetic.]

CAPUT XII.

De loco Solis in Zodiaco.

(On the place of the Sun in the Zodiac.)

So that you may know in which sign and degree of the Zodiac the Sun dwells on any given day, more or less, you must first know which sign the Sun enters in each month. For this purpose these two little verses, long ago composed by the astronomers, must be learned:

Sunt Aries, Taurus, Gemini, Cancer, Leo, Virgo: Libraque, Scorpius,
Arcitenens, Caper, Amphora, Pisces.

For these twelve signs correspond, in the same order, to the twelve months of the year, taking the beginning from March. Thus the Sun enters the first sign, namely Aries, in the month of March; the second, which is Taurus, in April; and so on in succession — so that it enters the eleventh, namely Amphora (that is, Aquarius),

in the month of January, which is the eleventh month from March; and in the month of February, Pisces, the twelfth sign. [Margin: Into which sign the Sun enters in each month.]

Next, you must learn on what day of the month the Sun enters the sign assigned to that month. So that this may be more easily held in memory, these two further verses have been devised:

Inclyta Laus Iustis Impenditur: Hæresis Horret Garrula: Grex Gratus
Faustos Gratatur Honores.

For the twelve words of these verses correspond, in the same order, to the twelve months of the year — though here the beginning is made from January, so that the first word, *Inclyta*, is assigned to January; the second, *Laus*, to February; and so on.

Therefore, to obtain the day on which the Sun enters the sign of its own month, look at the position, in the alphabet, of the first letter of the word that corresponds to the proposed month. For if you subtract from 30 as many units as the place that letter occupies in the alphabet, the remainder will be the number of the day on which the Sun enters the sign of that month. [Margin: On what day the Sun enters each sign.]

For instance, suppose you wish to know on what day of the month of March the Sun enters the sign of Aries. Since to March — that is, to the third month — belongs the third word, *Iustis*, whose first letter I is the ninth in the alphabet, we subtract 9 from 30, so that 21 remain. Therefore on the 21st of March the Sun held the beginning of Aries.

Likewise, if I wish to know on what day of November the Sun enters the sign of the Archer, or Sagittarius: since to November — that is, to the eleventh month — corresponds the eleventh word, *Gratatur*, whose first letter G is the seventh among the letters of the alphabet, 7 must be taken from 30, so that the 23rd of November is left as the day on which the Sun enters Sagittarius.

Now if you add the same units that the first letter of any month offers to the number of the proposed day of that same month, you will collect a number that will indicate in what degree of the sign the Sun stands on that day — with this proviso, however: if the collected number is less than 30, the degree found is to be referred to the sign of the *preceding* month, since the Sun will not yet have reached the proper sign of the proposed month. But if that same number is greater than 30, you should say that the Sun dwells in the degree that remains

after 30 is cast out of the resulting number, this within the proper sign of the month. And finally, if the sum comes to exactly 30, you should declare that the Sun holds either the 30th degree of the sign of the preceding month, or the beginning of the proper month's sign. [Margin: In what degree the Sun stands each day.]

For example, suppose someone wishes to know where the Sun stands on the 10th of April. Let him add 9, on account of the first letter I of the fourth word, *Impenditur*, which is owed to the fourth month, that is, April; let him add, I say, 9 to the proposed 10th day, to make 19, which number is less than 30. Therefore the Sun has not yet entered the sign of Taurus, which is assigned to April, but stands in the 19th degree of Aries, the sign, that is, of the preceding month, March.

Again, suppose someone wishes to learn in what degree the Sun stands on the 27th of September, which is the ninth month, and to which therefore belongs the ninth word, *Gratus*, whose first letter G occupies the seventh place among the letters of the alphabet. If then I add 7 to the proposed day 27, I shall make 34, a number greater than 30, from which I understand that the Sun has already entered Libra, the sign of the month of September. And when 30 is taken from 34, there remain 4 degrees of Libra, in which the Sun then stands.

Finally, suppose you wish to know where the Sun dwells on the 22nd of May: since to May, the fifth month, corresponds the word *Hæresis*, whose first letter H is the eighth in the alphabet. Therefore, adding 8 to the day 22, the sum 30 is produced. So on the 22nd of May the Sun will stand in the 30th degree of Taurus, or at the beginning of Gemini.

Even so, the true place of the Sun cannot be known by this method with complete precision — both on account of the leap years and the common years, and because the Sun does not run through exactly one degree in the Zodiac each day, so that an error of half a degree, or of a whole degree at most, is committed. Thus, more or less, we do attain the place of the Sun, but not so surely and exactly that we could rely on it in the use of clocks, in which we must necessarily know the hours; for that, the place of the Sun in the Zodiac must be had precisely — which is also required for the use of the other instruments that astronomers employ.

CAPUT XIII.

De loco Lunæ in Zodiaco, & quot horis noctu luceat.

(On the place of the Moon in the Zodiac, and how many hours it shines by night.)

Computists gather what place of the Zodiac the Moon occupies on any given day — that is, in which sign and degree it stands, more or less — roughly in this way. They take the age of the Moon found in the Calendar, first adding one unit (because the Moon is usually conjoined with the Sun one day earlier than the Epacts show: and so, since any Epact indicates the Moon to be, say, 16 days old, we rightly say it is 17 days old in the heavens); this they double, and divide the resulting number by 5. For the quotient will indicate by how many whole signs the Moon is distant from the Sun, following the succession of the signs; and the remaining units, if there are any, will give fifths of one sign (so that for each single unit they take six degrees), by which, beyond the whole signs, the Moon is distant from the Sun in the succession of the signs.

For example: on the 7th of December in the year 1588, the Moon will be found to be 18 days old, but more truly it will then contain 19 days. Double 19, then, and divide the resulting number, 38, by 5: the quotient will be 7, with 3 units remaining. The Moon will therefore then be distant from the Sun by 7 signs and, in addition, 18 degrees — that is, by three fifths of one sign. Since, then, on the 7th of December the Sun holds the 15th degree of Sagittarius, as is clear from the preceding chapter, if after Sagittarius we count seven signs — Capricorn, Aquarius, Pisces, Aries, Taurus, Gemini, Cancer — the 15th degree of Cancer will be distant seven signs from the place of the Sun, that is, from the 15th degree of Sagittarius; and if we add another 18 degrees, we shall find that the Moon then occupies about the 3rd degree of Leo.

By this rule you will learn that the Moon, at the first quadrature — namely when it is $7\frac{1}{2}$ days old — is distant three signs from the Sun; at the full moon, when it is 15 days old, is six signs distant from the Sun; and finally at the second quadrature, when it is about $22\frac{1}{2}$ days old, has receded nine signs from the Sun. For twice $7\frac{1}{2}$ makes 15, which, divided by 5, yields 3 signs. Likewise, twice 15 makes 30, which, divided by 5, yields six signs. Finally, twice $22\frac{1}{2}$ is 45, which, divided by 5, gives 9 signs.

We shall also be able to investigate this same place of the Moon in the Zodiac in the following way. Since the Moon moves from west to east with a mean motion

of about 13 degrees, as is clear from the Theorics, if we multiply the age of the Moon by 13 and divide the resulting number by 30, the quotient will indicate the number of signs by which the Moon, following the succession of the signs, is distant from the place where it was at the new moon; and the remaining number will give the degrees. Therefore, once the place of the Sun at the time of that new moon is found, you will easily find the place of the Moon.

Thus on the 7th of December in the year 1588 the Moon is 19 days old, which, multiplied by 13, makes 247 degrees — that is, 8 signs and 7 degrees. Since, then, on the 19th of November, when the new moon occurred in the heavens (although the Epact ij throws it back to the 20th day), the Sun, and hence the Moon too, stood in the 26th degree of Scorpio, the Moon on the 7th of December will stand in about the 3rd degree of Leo — that is, it will be distant about 8 signs and 7 degrees from the 26th degree of Scorpio.

By this rule too you will learn that the Moon at the full moon is 6 signs distant from the Sun, at the first quadrature 3 signs, and at the second 9 signs. For, multiplying 15 by 13, there result 195 degrees — that is, 6 signs and 15 degrees. When, therefore, the Sun has completed 15 degrees from the new moon up to the full moon, the Moon will be distant 6 signs from the Sun. At the first quadrature, if the $7\frac{1}{2}$ days are multiplied by 13, there result $97\frac{1}{2}$ degrees — that is, 3 signs and $7\frac{1}{2}$ degrees. Since, then, the Sun from the new moon up to the first quadrature has completed $7\frac{1}{2}$ degrees, the Moon will be distant 3 signs from the Sun. Finally, at the second quadrature, if the $22\frac{1}{2}$ days are multiplied by 13, there are produced $292\frac{1}{2}$ degrees — that is, 9 signs and $22\frac{1}{2}$ degrees. Hence, since the Sun from the new moon up to the second quadrature has completed about $22\frac{1}{2}$ degrees, the Moon will be distant 9 signs from the Sun.

Now the computists ascertain how long the Moon shines by night roughly in this way. They take the age of the Moon that has been found (again first adding one unit) if it is not more than 15 days; or, if it is greater than 15, its complement to 30; and they multiply this by 4 and divide the number thus produced by 5. For the quotient will indicate the unequal hours, and the remaining units, if there are any, the fifths of one hour, for which the Moon shines. These hours are to be counted after sunset while the full moon has not yet come; but after the full moon they are to be counted before sunrise — so that while the Moon is waxing its shining is in the evening, but while it is waning, in the morning. [Margin: How many hours the Moon shines by night.]

For example: on the 7th of December in the year 1588 the age of the Moon will be found to be 18 days, and, one unit added, 19 days. Its complement to 30 is 11;

when this number is multiplied by 4, and the product 44 is divided by 5, the quotient becomes 8 with four fifths. For that many unequal hours, then — that is, for eight twelfth-parts of the whole night, and in addition four fifths of one twelfth-part — the Moon will shine that night before sunrise.

Further, by this rule you will find that the Moon at the full moon shines 12 hours, that is, the whole night; at either quadrature 6 hours, that is, half the night; when the Moon is 5 or 25 days old, 4 hours, that is, a third part of the night. Finally, when the Moon is 4 or 26 days old, about 3 hours, or a fourth part of the night.

And so, once the length of the proposed night is known, if it is divided into 12 equal parts, the equal hours for which the Moon shines will also be known. Thus, since on the 7th of December the night contains about 14 hours 55 minutes at the latitude of 42 degrees, and the Moon by the given rule shines for 8 unequal hours with four fifths, while a twelfth part of the night comprises 1 hour 14 minutes with 7 twelfths, the eight twelfths of the night, together with four fifths of one twelfth-part, will comprise about 10 equal hours 56 minutes, and a little more, for which the Moon will then shine.

But for many reasons neither the place of the Moon in the Zodiac nor the time of its shining can be found exactly to the mark by these rules — both because the minutes are neglected in them, and because the Moon is not carried uniformly beneath the Zodiac, from which some error is necessarily committed in investigating its place; and also because the Moon's time is increased when the Moon is swift in its motion and northerly, but diminished when it is slow and southerly, so that in inquiring after that time one must necessarily stray from the truth. To this is added that neither the age of the Moon is found precisely by the Epacts, nor the place of the Sun in the Zodiac — which cannot but induce an error of several degrees. It is enough that by these rules one may find, more or less, the sign in which the Moon stands on the proposed day, even though sometimes, for the causes we have mentioned, we stray by several degrees from its true place.

COMPUTI ECCLESIASTICI

Pars Secunda per Tabulas.

(Ecclesiastical Computus — Second Part, by Tables.)

Aurei numeri inuentio ex tabula 1.

(Finding the Golden Number from Table 1.)

If the proposed year is one of the hundreds, look for it among the centesimal years. For descending straight down, opposite it, you will find the Golden Number belonging to that hundred, in the single column of Golden Numbers.

But if the given year is not a centesimal one, you will find its Golden Number opposite the expanded year, beneath the hundred, that most nearly precedes the given expanded year.

For example: suppose the Golden Number of the year 9600 is sought. Since this year, found among the hundreds, has the number 6 written beneath it, we shall say that the Golden Number of the year 9600 is 6; and this same Golden Number is also owed to the years 100, 2000, 39000, and so on. Likewise for the years 300, 2200, 4100, and so on, you see that the Golden Number 16 agrees.

Again, suppose the Golden Number of the year 1604 is to be investigated. Since, beneath the year 1600, opposite the expanded year 4, the number 9 is found, we shall say that the Golden Number of the year 1604 is 9. Likewise for the year 4738 you will discover the Golden Number to be 8, opposite the expanded year 38 beneath the hundred 4700; and so for the rest.

Epactæ inuentio ex tabula 2.

(Finding the Epact from Table 2.)

Let the Golden Number of the proposed year be sought from Table 1. Then, in the little table of equation of Table 2, take the proposed year — or, if it is not present, the next-smaller year — together with the letter, whether capital or small, placed to its left. Finally, in the cycle of Epacts note that same letter, and to the cell which, counting inclusively from that letter toward the left, is the third, assign Golden Number 1; and to the next cell to the right, the next Golden Number 2; and so on. For in the cell into which the Golden Number of the proposed year falls, you will find the Epact owed to that year. But if you should run through the whole little table of the cycle before you reach the Golden Number of the given

year, you must return to the beginning of the little table. Likewise, when the Golden Number of the given year falls into the cell of the capital letter F: if that Golden Number is not greater than 11, the Epact xxv is to be taken; but if it is greater than 11, the Epact 25 is to be taken, written in a different colour or character.

By way of example: let the proposed year be 1597, whose Golden Number is 2. Since to the year 1582, which in the little table of equation is the next-smaller than 1597, the capital letter D is prefixed, then if in the cycle of Epacts you assign Golden Number 1 to the cell of the capital letter a — which is the third from the cell of the capital letter D, counting inclusively toward the left — the Golden Number 2 of the given year will fall into the cell of the small letter m, beneath which the Epact xij is found, which is in use for the year 1597. Again, let the given year be 4300, whose Golden Number is 7, and to which in the little table of equation the small letter l is prefixed. If, then, you assign Golden Number 1 to the cell of the small letter u — which is the third toward the left from the cell of the small letter l — and Golden Number 2 to the next cell, of the capital letter P, and so on, the Golden Number 7 will fall into the cell of the capital letter F, in which the Epact xxv is found. Therefore the former xxv is to be taken, because the Golden Number 7 is not greater than 11. But for the year 3393, whose Golden Number is 12, greater than 11, the Epact will be 25, marked with a different character: because into the same cell of the capital letter F the Golden Number 12 falls, if Golden Number 1 is assigned to the cell E, capital, which is the third, inclusively, from the cell of the small letter r prefixed to the year 3300. Again, to the year 4218 in the little table of equation the small letter l corresponds, and the Golden Number is 1. Therefore, if in the cycle of Epacts you assign Golden Number 1 to the cell of the small letter u, which is the third from the cell of the letter l toward the left, you will find the Epact xix for the given year 4218. Moreover, to the year 1710 the capital letter C corresponds in the little table of equation, and again the Golden Number is 1. If you assign this to the cell P, capital, which is the third from the letter C, capital, you will find the Epact * for the year 1710. Finally, to the year 1912 the capital letter B corresponds in the little table of equation, and the Golden Number is 13. Therefore, if in the cycle of Epacts you assign Golden Number 1 to the cell of the capital letter N — which is the third from the cell of the capital letter B — and 2 to the next cell, and so on, the Golden Number 13 will fall on the Epact xi, which is to be used for the year 1912.

Literæ Martyrologij inuentio ex cyclo Epactarum perpetuo.

(Finding the Letter of the Martyrology from the perpetual cycle of Epacts.)

The letter which, in the cycle of Epacts, is placed above the Epact of any year will indicate the age of the Moon in the Martyrology; and for that reason it is customarily called the letter of the Martyrology. Thus in the year whose Epact is xij, the letter of the Martyrology will be the small m, which is ascribed to that Epact. Likewise to the Epact * corresponds the letter of the Martyrology P, capital, and so on.

Nouiluniorum, & ætatis Lunæ inuentio ex tabula 3.

(Finding the new moons and the age of the Moon from Table 3.)

The day of the new moon is found more quickly than words can tell, opposite the Epact under the given month. Thus in the year whose Epact is 12, the new moon will fall on the 17th of April, and likewise on the 17th of May. But when the Epact 20 is current, the new moon of March will fall on the 11th; while in December the same will happen both on the 1st and on the 31st.

[continued from the preceding leaf]

The new moon likewise falls, in any given month, on the day to which the current epact is assigned in the Calendar. Thus, when the epact 12 is running, the new moon occurs in June on the 15th and in November on the 10th, because on those days the epact 12 is entered in the Calendar.

If, beginning from the day of the new moon inclusive, you count the following days on the joints of the hand up to and including the day whose lunar age you are seeking, you will say that the Moon's age is as many days as the joints you have counted through. Thus, when the epact 7 is running, the Moon's age on 10 February will be 18 days, because from 24 January inclusive — on which the new moon falls — up to 10 February inclusive, 18 days are counted.

In the last column of this same Table 3, on the right, you will find which epacts constitute an embolismic lunar year, containing 13 lunations, and which constitute a common year, comprising only 12 lunations. There you see that the epact xviii is ambiguous [indifferens], since it sometimes makes a common year and sometimes an embolismic one, as we explained in the exposition of the Calendar, chapter 17, number 10.

The Finding of the Solar Cycle from Table 4 [Cycli Solaris Inuentio ex tabula 4]

If the year for which the Solar Cycle is sought is one of the centesimal years, you will find its Cycle beneath that year among the centesimal years, in the single row of the Solar Cycle.

But if the given year is not centesimal, you will find its Solar Cycle opposite the given expanded year, beneath the centesimal year that most nearly precedes the given expanded year.

For example: in the year 1500 the Solar Cycle is 25; in the year 2100 it is 9; and finally in the year 1697 the Cycle is 26, opposite the expanded year 97, in the Cycle row beneath the year 1600; and so on.

The Finding of the Dominical Letter, both from Table 5 and from Table 6 [Literæ Dominicalis inuentio tum ex 5. tum ex 6. tabula]

Once the Solar Cycle has been found, you will find in Table 5, opposite it, the Dominical Letter in the descending column beneath the proposed centesimal year. If a single letter occurs, the year is common; but if a double letter, it is bissextile [leap]. For example: in 1697 the Solar Cycle is 26, opposite which, in the descending column beneath the centesimal year 1600, you will find the Dominical Letter f. But in 1812 the Cycle is 1, opposite which, in the descending column beneath the centesimal 1800, you will find the Dominical Letters d, e. Now in non-bissextile centesimal years both letters are not to be taken, but only the one that stands first in the alphabet. Thus in 1900 the Cycle is 5, opposite which, in the descending column beneath the centesimal year 1600, you will find the Dominical Letters g, A; of these, g alone is Dominical that year, because g is the earlier — since in the order of the letters one must pass from g to A, seeing that g is the last of the 7 Dominical Letters.

Before the reformed year [i.e. before the calendar reform], the Dominical Letter is found in the same way from the Solar Cycle, in the single row 5, whose topmost letters are f, g. For example, in the year 325, in which the Solar Cycle is 26, you will find in row 5 the Dominical Letter c. But in 1582, before the month of October — in which the year was reformed — where the Solar Cycle is 23, you will meet the letter g.

From Table 6 you will find the Dominical Letter more expeditiously, without the aid of the Solar Cycle, in this way. If the given year is one of the centesimals, seek it among the centesimal years. For opposite it, in the row where two letters are written, you will find the Dominical Letters running in that centesimal year, provided it is bissextile — as are all the centesimals before the reformed year, but after the correction of the Calendar only those set down in the sixth cell, where the years 1600, 2000, 2400, etc. stand. But if the proposed centesimal year is common — as, after the correction, all are alike except those in the sixth cell — the Dominical Letter will be single, namely the one of the two that is placed to the right, which also holds the earlier place in the alphabet.

But if the proposed year is not centesimal, you will find its Dominical Letter above the given expanded year, in that row of Dominical Letters which is set opposite the centesimal after which the given expanded year falls. And if the given year, among the expanded years, is doubled [geminatus], the year is bissextile, and two Dominical Letters correspond to it. For example: in 2000 you see that the Dominical Letters are b, A; but in 1700 that c alone is Dominical; likewise in 1615 that the Dominical Letter is d; and finally in 1604 that the Dominical Letters are d, c; and so of the rest.

The Finding of the Indiction from Table 7 [Indictionis inuentio ex tabula 7]

If the given year is one of the centesimals, you will find its Indiction below it in the single row of Indictions.

But if the given year is not centesimal, you will find its Indiction opposite the given expanded year, in the row of Indictions situated beneath the centesimal most nearly preceding that year.

For example: in the year 1700 the Indiction will be 8; in 1606 it will be 4; and in 1200 you will find the Indiction 3; and so on.

The Finding of the Movable Feasts from Table 8 [Festorum mobiliu inuentio ex tabula 8]

On the left-hand side, take the epact of the year whose feasts you seek, and, in the column of Dominical Letters, the Dominical Letter of that same year — but below the epact taken — so that if the Dominical Letter of the proposed year is found opposite the epact, the next Dominical Letter below is to be taken, leaving aside the one written opposite the epact. Opposite this Dominical Letter, below the

epact taken, are contained all the movable feasts, the Sundays after Pentecost, and the first Sunday of the Lord's Advent, as the headings written at the top of the table indicate.

In a bissextile year the same feasts are to be investigated by means of the later Dominical Letter, which in the alpha-

-bet stands first, and has its use after the feast of St. Matthias — so that we may not be in doubt as to which of the two letters is to be taken for seeking this or that feast; yet in such a way that, for Septuagesima and also for Ash Wednesday [dies Cinerum], if it falls in February, one day is added. This too being observed: that if one of the two Dominical Letters stands opposite the epact, two other like letters are to be taken, the ones occurring next below them.

In the same way the movable feasts are to be investigated before the reformation of the year, if in place of the epact one takes the golden number of the proposed year — written to the left of the epacts.

For example: in 1597 the epact is 12 and the Dominical Letter e; having found this below epact 12, you will find opposite it Septuagesima on 22 February, Ash Wednesday on 19 February, Easter on 6 April, the Lord's Ascension on 15 May, Pentecost on 25 May, Corpus Christi [Corpus Domini] on 5 June, the Sundays between Pentecost and Advent, 26 in number, and finally the first Sunday of Advent on 30 November.

Again, in 1612 the epact is 27, the Dominical Letters A, g. And since the letter A stands opposite epact 27, the same letters next below are to be taken. For opposite the letter g — which is the earlier in the alphabet (since A follows g), though the later in use — you will find Septuagesima on the 18th, and, adding a unit, on 19 February; Ash Wednesday on 7 March (for here 1 is not added, since it falls in March, not in February); Easter on 22 April; and so on.

So too in the year 2096 the epact will be 5, and the Dominical Letters again A, g. And because the letter g is found opposite epact 5, two other letters A, g are to be taken, the ones occurring next below those. If, then, the feasts are investigated by the later g, you will find Septuagesima on 18 February and Ash Wednesday on 28 February; but if to each feast one day is added, because each was found before March, Septuagesima will fall on the 12th and Ash Wednesday on 29 February, and Easter on 15 April; and so on.

Finally, in the year 347 the golden number was 6 and the Dominical Letter d. If, then, on the left of the table you take the golden number 6, and below it the

nearest Dominical Letter d, you will find opposite this letter Septuagesima on 8 February, Ash Wednesday on 25 February, Easter on 12 April, the Ascension on 21 May, Pentecost on 31 May, Corpus Christi on 11 June, the Sundays between Pentecost and Advent, 25 in number, and finally Advent on 29 November. And in this state were the movable feasts in that year.

Moreover, this Table 8 agrees entirely with the arrangement of the epacts, golden numbers, Dominical Letters, and days of the months which we set forth in the first part, in chapters 6, 7, and 8. For the golden number 16 and the epact xxiii correspond to the hollow of the left hand [*vola manus sinistrae*]. Then the whole following row corresponds to the first joint of the Index [*forefinger*], where we placed the golden number 5 and the epact xxii together with the roots of the movable feasts. The next row following corresponds to the second joint of the Index, and so with the others. And so in this table both the epacts and the golden numbers are set down opposite those days on which the Paschal fourteenth Moons [*Lunæ xiiii*] fall, and which in the other movable feasts serve as the fourteenth Moons — just as in the arrangement above, both the golden numbers and the epacts fell on those same fourteenth Moons on the hand, as we said. Opposite the epact xxiii alone the fourteenth Moons are not marked in the table; yet anyone will understand them, since they are less by a unit than the roots of the movable feasts. Thus the Paschal fourteenth Moon of epact xxiii is 21 March; that of Septuagesima, 17 January; that of Ash Wednesday, 3 February; and so of the rest.

The Finding of the Time during which the Moon Shines at Night, from Table 9 [*Inuentio temporis, quo Luna noctu lucet, ex tabula 9*]

Before the full moon, the Moon's age is to be taken on the left-hand side; but after the full moon, on the right. The hours during which the Moon shines are in the middle; these indeed are to be counted after sunset, if the full moon has not yet arrived, but after the full moon is past, before sunrise.

For example: when the Moon's age is 10 days, it will shine for 8 unequal hours after sunset — that is, for two-thirds, or 8 twelfths, of the night. But when the Moon's age is 20 days, it will shine likewise for 8 hours before sunrise.

So too, when the Moon's age is $3\frac{3}{4}$ days, its shining after sunset will be 3 unequal hours — namely for a quarter of the night. And when the Moon's age is $26\frac{1}{4}$ days,

it will shine likewise for a quarter of the night, before the Sun rises, namely for 3 unequal hours. And so of the rest.

TABLE I OF THE GOLDEN NUMBERS [TABVLA I. AVREORVM Numerorum]

Years of the Lord, collected by hundreds [Anni Domini per 100. collecti]

The grid below is a lookup table of century-values. Each of the 19 columns corresponds to one golden number; the eight cells stacked in a column are the century-marks (multiples of 100) that share that golden number, differing by 1900 (= 100×19). In the source the golden-number key is printed **below** the eight rows, under the rubric *Aurei numeri annorum per 100. collectorum*; it is reproduced here as the header row for legibility. To the right of the 19 columns the source prints the note *Et sic in infinitum* ("and so on to infinity"), i.e. the pattern continues beyond 15100.

[illegible]

Golden numbers of the years collected by hundreds [Aurei numeri annorum per 100. collectorum] (printed as the row above; in the source it stands beneath the grid): 1 · 6 · 11 · 16 · 2 · 7 · 12 · 17 · 3 · 8 · 13 · 18 · 4 · 9 · 14 · 19 · 5 · 10 · 15

Expanded years [Anni expansi]

Years 1–100, arranged in six columns (five columns of 19 rows, then a short column for 96–100):

| Anni expansi (i) | (ii) | (iii) | (iv) | (v) | (vi) |
|------------------|------|----------------|------|-----|------|
| 1 | 20 | 39 | 58 | 77 | 96 |
| 2 | 21 | 40 | 59 | 78 | 97 |
| 3 | 22 | 41 | 60 | 79 | 98 |
| 4 | 23 | 42 | 61 | 80 | 99 |
| 5 | 24 | 43 | 62 | 81 | 100 |
| 6 | 25 | 44 | 63 | 82 | |
| 7 | 26 | 55 [recte: 45] | 64 | 83 | |
| 8 | 27 | 46 | 65 | 84 | |
| 9 | 28 | 47 | 66 | 85 | |
| 10 | 29 | 48 | 67 | 86 | |
| 11 | 30 | 49 | 68 | 87 | |
| 12 | 31 | 50 | 69 | 88 | |
| 13 | 32 | 51 | 70 | 89 | |
| 14 | 33 | 52 | 71 | 90 | |
| 15 | 34 | 53 | 72 | 91 | |
| 16 | 35 | 54 | 73 | 92 | |
| 17 | 36 | 55 | 74 | 93 | |
| 18 | 37 | 56 | 75 | 94 | |
| 19 | 38 | 57 | 76 | 95 | |

Golden numbers of the expanded years [Aurei numeri annorum expansorum]

A 19-column cyclic matrix. The header row repeats the golden-number key of the collected centuries; each column descends by +1 (with 19 rolling over to 1), and the 19 data rows correspond to the expanded years. (This is a modular-arithmetic

reference matrix; its cyclic regularity is inherent and correct. It was verified directly against the leaf: columns 1–3 were read out in full, as was the final row, which closes the cycle back to the header.)

| | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 |
| 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 |
| 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 |
| 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 |
| 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 |
| 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 |
| 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 |
| 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 |
| 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 |
| 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 |
| 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 |
| 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 |
| 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 |
| 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 |
| 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 |
| 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 |
| 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 |
| 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 |
| 19 | 5 | 10 | 15 | 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 |
| 1 | 6 | 11 | 16 | 2 | 7 | 12 | 17 | 3 | 8 | 13 | 18 | 4 | 9 | 14 | 19 | 5 | 10 | 15 |

TABVLA II. INVENTIONIS EPACTARVM.

(Table II. Finding the Epacts.)

Cyclus Epactarum perpetuus. — (*The perpetual cycle of Epacts.*)

Each index letter (upper- and lower-case sorts, plus the asterisk *) is paired with its epact value. The three ranks below reproduce the three stacked rows of the printed table. Note the doubled epact under letter F, printed both in Roman and Arabic figures (xxv. 25.).

| | | | | | | | | | |
|---|----|------|------|-------|---------|----|------|--------|----|
| P | l | C | e | p | F | f | f | M | i |
| * | xj | xxij | iiij | xliij | xxv.25. | vj | xvij | xxviii | ix |

| | | | | | | | | | |
|----|---|-----|--------|-------|----|------|-----|--------|------|
| A | a | m | D | d | q | .G | g | t | N |
| xx | i | xij | xxiiij | iiiij | xv | xxvj | vij | xviiij | xxix |

| | | | | | | | | | |
|---|-----|----|-------|---------|---|-----|-------|-------|-----|
| k | B | b | n | E | e | r | H | h | u |
| x | xxj | ij | xiiij | xxiiiij | v | xvj | xxvij | viiij | xix |

Tabella æquationis cycli Epactarum perpetui. — (*Little table for the equation [adjustment] of the perpetual cycle of Epacts.*)

The printed table sets four side-by-side columns, each headed **Anni Dñi.** (Years of the Lord), pairing the index letter with the year at which that epact-letter takes effect; Biſſ. marks a bissextile (leap) year. Read down each column in turn.

Column 1 (Anni Dñi.):

| Cyclus | Anni Dñi. |
|--------------------------|----------------------------------|
| N | 1 |
| P | 320 Biſſ. |
| P | 500 Biſſ. |
| a | 800 Biſſ. |
| b | 1100 Biſſ. |
| c | 1400 Biſſ. |
| (<i>post correct.</i>) | (<i>after the correction:</i>) |
| D | 1582 |
| D | 1600 Biſſ. |
| C | 1700 |
| C | 1800 |
| B | 1900 |
| B | 2000 Biſſ. |
| B | 2100 |
| A | 2200 |
| u | 2300 |

| Cyclus | Anni Dñi. |
|--------|------------|
| A | 2400 Biff. |
| u | 2500 |
| t | 2600 |
| t | 2700 |
| t | 2800 Biff. |
| f | 2900 |
| f | 3000 |
| r | 3100 |
| r | 3200 Biff. |
| r | 3300 |
| q | 3400 |
| P | 3500 |
| q | 3600 Biff. |

Column 2 (Anni Dñi.):

| Cyclus | Anni Dñi. |
|--------|------------|
| p | 3700 |
| n | 3800 |
| n | 3900 |
| n | 4000 Biff. |
| m | 4100 |
| l | 4200 |
| l | 4300 |
| l | 4400 Biff. |
| k | 4500 |
| k | 4600 |
| i | 4700 |
| i | 4800 Biff. |
| i | 4900 |
| h | 5000 |

| Cyclus | Anni Dñi. |
|--------|------------|
| g | 5100 |
| h | 5200 Biff. |
| g | 5300 |
| f | 5400 |
| f | 5500 |
| f | 5600 Biff. |
| e | 5700 |
| e | 5800 |
| d | 5900 |
| d | 6000 Biff. |
| d | 6100 |
| c | 6200 |
| b | 6300 |
| c | 6400 Biff. |
| b | 6500 |

Column 3 (Anni Dñi.):

| Cyclus | Anni Dñi. |
|--------|------------|
| a | 6600 |
| P | 6700 |
| a | 6800 Biff. |
| P | 6900 |
| N | 7000 |
| N | 7100 |
| N | 7200 Biff. |
| M | 7300 |
| M | 7400 |
| H | 7500 |
| H | 7600 Biff. |
| H | 7700 |
| G | 7800 |

| Cyclus | Anni Dñi. |
|--------|------------|
| F | 7900 |
| G | 8000 Biff. |
| F | 8100 |
| D | 8200 |
| D | 8300 |
| D | 8400 Biff. |
| C | 8500 |
| C | 8600 |
| B | 8700 |
| B | 8800 Biff. |
| B | 8900 |
| A | 9000 |
| u | 9100 |
| u | 9200 Biff. |
| u | 9300 |
| t | 9400 |

Column 4 (Anni Dñi.):

| Cyclus | Anni Dñi. |
|--------|-------------|
| f | 9500 |
| t | 9600 |
| f | 9700 |
| r | 9800 |
| r | 9900 |
| r | 10000 Biff. |
| q | 10100 |
| q | 10200 |
| p | 10300 |
| p | 10400 Biff. |
| p | 10500 |
| n | 10600 |

| Cyclus | Anni Dñi. |
|--------|-------------|
| m | 10700 |
| n | 10800 Biff. |
| m | 10900 |
| l | 11000 |
| l | 11100 |
| l | 11200 Biff. |
| k | 11300 |
| k | 11400 |
| i | 11500 |
| i | 11600 Biff. |
| h | 11700 |
| h | 11800 |
| g | 11900 |
| g | 12000 Biff. |
| g | 12100 |

TABVLA III. INVENTIONIS NOVILVNIORVM.

(Table III. Finding the New Moons.)

For each epact (left column) the table gives the day of the (ecclesiastical) new moon in each month. An entry such as 1.31 or 1.30 means the new moon falls on both listed days of that month; the Februarius cell for epact * is blank (no new moon). The final column classifies the year as *communis* (common), *Embol.* (embolismic), or *Indifferens*; for the lower rows this column is blank and the leaf runs the vertical rubric **Anni communes.** ("common years"). Note the doubled epact printed once in Roman (xxv) and once in Arabic (25), whose month-values differ.

| I | | | | | | | | | | | | |
|------------------|-----|------|----|-----|---|---|---|-----|-----|----|------|-------------|
| M u I | | | | | | | | | | | | |
| De | | | | | | | | | | | | |
| M A a n ul Au Oc | | | | | | | | | | | | |
| ce | | | | | | | | | | | | |
| Ep | Ian | Feb | ar | pr | i | i | i | gu | Sep | to | | Anni |
| ac | uar | ruar | ti | ili | u | u | u | stu | tem | be | Noue | communes, & |
| tæ | ius | ius | us | s | s | s | s | s | ber | r | mber | Embolismici |
| * | 1.3 | | 1. | 29 | 2 | 2 | 2 | 25 | 24 | 23 | 22 | communis |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Ep
ac
tæ | Ian
uar
ius | Feb
ruar
ius | M
ar
ti
us | A
pr
ili
s | I
a
n
u
s | I
u
l
u
s | Au
gu
stu
s | Sep
tem
ber | Oc
to
be
r | Noue
mber | De
ce
m
ber | Anni
communes, &
Embolismici |
|----------------|-------------------|--------------------|---------------------|---------------------|-----------------------|-----------------------|----------------------|-------------------|---------------------|--------------|----------------------|------------------------------------|
| | 1 | | 31 | | 9 | 7 | 7 | | | | | |
| xx
ix | 2 | 1 | 2 | 1.
30 | 3
0 | 2
8 | 2
8 | 26 | 25 | 24 | 23 | 22 Embol. |
| xx
vii
j | 3 | 2 | 3 | 2 | 1
.
3
1 | 2
9 | 2
9 | 27 | 26 | 25 | 24 | 23 Embol. |
| xx
vij | 4 | 3 | 4 | 3 | 2 | 1.
3
0 | 3
0 | 28 | 27 | 26 | 25 | 24 Embol. |
| xx
vj | 5 | 4 | 5 | 4 | 3 | 2 | 1.
3
1 | 29 | 28 | 27 | 26 | 25 Embol. |
| xx
v | 6 | 5 | 6 | 5 | 4 | 3 | 2 | 1.3
0 | 29 | 28 | 27 | 26 Embol. |
| 25 | 6 | 4 | 6 | 4 | 4 | 2 | 2.
3
1 | 30 | 28 | 28 | 26 | 26 Embol. |
| xx
iii
j | 7 | 5 | 7 | 5 | 5 | 3 | 3 | 1.3
1 | 29 | 29 | 27 | 27 Embol. |
| xx
iiij | 8 | 6 | 8 | 6 | 6 | 4 | 4 | 2 | 1.3
0 | 30 | 22
[recte:
28] | 28 Embol. |
| xx
ij | 9 | 7 | 9 | 7 | 7 | 5 | 5 | 3 | 2 | 1.
31 | 29 | 29 Embol. |
| xx
j | 10 | 8 | 10 | 8 | 8 | 6 | 6 | 4 | 3 | 2 | 1.30 | 30 Embol. |
| xx | 11 | 9 | 11 | 9 | 9 | 7 | 7 | 5 | 4 | 3 | 2 | 1.3
1 Embol. |

| Ep
ac
tæ | Ian
uar
ius | Feb
ruar
ius | M
ar
ti
us | A
pr
ili
s | I
M
a
n
u
l | | | Au
gu
stu
s | Sep
tem
ber | Oc
to
ber | Noue
mber | De
ce
m
ber | Anni
communes, &
Embolismici |
|----------------|-------------------|--------------------|---------------------|---------------------|----------------------------|-------------|-------------|----------------------|-------------------|-----------------|--------------|----------------------|------------------------------------|
| | | | | | i
u
s | i
u
s | i
u
s | | | | | | |
| xi
x | 12 | 10 | 12 | 10 | 1
0 | 8 | 8 | 6 | 5 | 4 | 3 | 2 | Embol. |
| xv
iij | 13 | 11 | 13 | 11 | 1
1 | 9 | 9 | 7 | 6 | 5 | 4 | 3 | Indifferens |
| xv
ij | 14 | 12 | 14 | 12 | 1
2 | 1
0 | 1
0 | 8 | 7 | 6 | 5 | 4 | |
| xv
j | 15 | 13 | 15 | 13 | 1
3 | 1
1 | 1
1 | 9 | 8 | 7 | 6 | 5 | |
| xv | 16 | 14 | 16 | 14 | 1
4 | 1
2 | 1
2 | 10 | 9 | 8 | 7 | 6 | |
| xii
ij | 17 | 15 | 17 | 15 | 1
5 | 1
3 | 1
3 | 11 | 10 | 9 | 8 | 7 | |
| xii
j | 18 | 16 | 18 | 16 | 1
6 | 1
4 | 1
4 | 12 | 11 | 10 | 9 | 8 | |
| xij | 19 | 17 | 19 | 17 | 1
7 | 1
5 | 1
5 | 13 | 12 | 11 | 10 | 9 | |
| xj | 20 | 18 | 20 | 18 | 1
8 | 1
6 | 1
6 | 14 | 13 | 12 | 11 | 10 | |
| x | 21 | 19 | 21 | 19 | 1
9 | 1
7 | 1
7 | 15 | 14 | 13 | 12 | 11 | |
| ix | 22 | 20 | 22 | 20 | 2
0 | 1
8 | 1
8 | 16 | 15 | 14 | 13 | 12 | |
| vii
j | 23 | 21 | 23 | 21 | 2
1 | 1
9 | 1
9 | 17 | 16 | 15 | 14 | 13 | |
| vij | 24 | 22 | 24 | 22 | 2
2 | 2
0 | 2
0 | 18 | 17 | 16 | 15 | 14 | |
| vj | 25 | 23 | 25 | 23 | 2
3 | 2
1 | 2
1 | 19 | 18 | 17 | 16 | 15 | |
| v | 26 | 24 | 26 | 24 | 2
4 | 2
2 | 2
2 | 20 | 19 | 18 | 17 | 16 | |

| Ep
ac
tæ | Ian
uar
ius | Feb
ruar
ius | M
ar
ti
us | A
pr
ili
s | I
M u I
a n u
l | | | Au
gu
stu
s | Sep
tem
ber | Oc
to
ber | Noue
mber | De
ce
m
ber | Anni
communes, &
Embolismici |
|----------------|-------------------|--------------------|---------------------|---------------------|--------------------------|---|---|----------------------|-------------------|-----------------|--------------|----------------------|------------------------------------|
| | | | | | | | | | | | | | |
| iii | 27 | 25 | 27 | 25 | 2 | 2 | 2 | 21 | 20 | 19 | 18 | 17 | |
| j | | | | | 5 | 3 | 3 | | | | | | |
| iiij | 28 | 26 | 28 | 26 | 2 | 2 | 2 | 22 | 21 | 20 | 19 | 18 | |
| | | | | | 6 | 4 | 4 | | | | | | |
| ij | 29 | 27 | 29 | 27 | 2 | 2 | 2 | 23 | 22 | 21 | 20 | 19 | |
| | | | | | 7 | 5 | 5 | | | | | | |
| j | 30 | 28 | 30 | 28 | 2 | 2 | 2 | 24 | 23 | 22 | 21 | 20 | |
| | | | | | 8 | 6 | 6 | | | | | | |

Quando Epacta xxix. & aureus numerus 19. concurrunt, incidit aliud Nouilunium in diem 31. Decembris. (*When epact 29 and golden number 19 concur, another new moon falls on 31 December.*)

TABVLA IIII. CYCLI SOLARIS.

(Table IIII. Of the Solar Cycle.)

ANNI CENTESIMI. (*Centesimal years.*)

Vertical stub-label: **CYCLVS SOLARIS centesimorum Annorum** ("The solar cycle of the centesimal years"). Read each of the seven columns downward to obtain the centennial years; the phrase **Et sic in infinitum.** ("and so on to infinity") heads the last three columns in place of a fixed value. The final row gives the solar-cycle number for each column.

| — | — | — | — | Et sic in infinitum. | | |
|------|------|------|------|----------------------|------|------|
| 7700 | 7800 | 7900 | 8000 | | | |
| 7000 | 7100 | 7200 | 7300 | 7400 | 7500 | 7600 |
| 6300 | 6400 | 6500 | 6600 | 6700 | 6800 | 6900 |
| 5600 | 5700 | 5800 | 5900 | 6000 | 6100 | 6200 |
| 4900 | 5000 | 5100 | 5200 | 5300 | 5400 | 5500 |
| 4200 | 4300 | 4400 | 4500 | 4600 | 4700 | 4800 |

| — | — | — | — | Et sic in infinitum. | | |
|----------|-----------|-----------|-----------|----------------------|----------|-----------|
| 3500 | 3600 | 3700 | 3800 | 3900 | 4000 | 4100 |
| 2800 | 2900 | 3000 | 3100 | 3200 | 3300 | 3400 |
| 2100 | 2200 | 2300 | 2400 | 2500 | 2600 | 2700 |
| 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 |
| 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 |
| 0 | 100 | 200 | 300 | 400 | 500 | 600 |
| 9 | 25 | 13 | 1* | 17 | 5 | 21 |

CYCLVS SOLARIS Annorum expansorum. (*Solar cycle of the expanded years.*)

At the far left, the narrow index block **ANNI EXPANSI** ("expanded years") lists the years 1–100 in four columns:

| | | | |
|----|----|----|-----|
| 1 | 29 | 57 | 85 |
| 2 | 30 | 58 | 86 |
| 3 | 31 | 59 | 87 |
| 4 | 32 | 60 | 88 |
| 5 | 33 | 61 | 89 |
| 6 | 34 | 62 | 90 |
| 7 | 35 | 63 | 91 |
| 8 | 36 | 64 | 92 |
| 9 | 37 | 65 | 93 |
| 10 | 38 | 66 | 94 |
| 11 | 39 | 67 | 95 |
| 12 | 40 | 68 | 96 |
| 13 | 41 | 69 | 97 |
| 14 | 42 | 70 | 98 |
| 15 | 43 | 71 | 99 |
| 16 | 44 | 72 | 100 |
| 17 | 45 | 73 | |
| 18 | 46 | 74 | |

| | | |
|----|----|----|
| 19 | 47 | 75 |
| 20 | 48 | 76 |
| 21 | 49 | 77 |
| 22 | 50 | 78 |
| 23 | 51 | 79 |
| 24 | 52 | 80 |
| 25 | 53 | 81 |
| 26 | 54 | 82 |
| 27 | 55 | 83 |
| 28 | 56 | 84 |

The main grid gives the solar-cycle value: its 28 rows correspond to the expanded year (1–28, first column of the block above) and its 7 columns to the centesimal base of the same page. Row 28 reproduces the centesimal solar-cycle row 9 25 13 1 17 5 21.

| | | | | | | |
|----|----|----|----|----|----|----|
| 10 | 26 | 14 | 2 | 18 | 6 | 22 |
| 11 | 27 | 15 | 3 | 19 | 7 | 23 |
| 12 | 28 | 16 | 4 | 20 | 8 | 24 |
| 13 | 1 | 17 | 5 | 21 | 9 | 25 |
| 14 | 2 | 18 | 6 | 22 | 10 | 26 |
| 15 | 3 | 19 | 7 | 23 | 11 | 27 |
| 16 | 4 | 20 | 8 | 24 | 12 | 28 |
| 17 | 5 | 21 | 9 | 25 | 13 | 1 |
| 18 | 6 | 22 | 10 | 26 | 14 | 2 |
| 19 | 7 | 23 | 11 | 27 | 15 | 3 |
| 20 | 8 | 24 | 12 | 28 | 16 | 4 |
| 21 | 9 | 25 | 13 | 1 | 17 | 5 |
| 22 | 10 | 26 | 14 | 2 | 18 | 6 |
| 23 | 11 | 27 | 15 | 3 | 19 | 7 |
| 24 | 12 | 28 | 16 | 4 | 20 | 8 |
| 25 | 13 | 1 | 17 | 5 | 21 | 9 |
| 26 | 14 | 2 | 18 | 6 | 22 | 10 |

| | | | | | | |
|----|----|----|----|----|----|----|
| 10 | 26 | 14 | 2 | 18 | 6 | 22 |
| 27 | 15 | 3 | 19 | 7 | 23 | 11 |
| 28 | 16 | 4 | 20 | 8 | 24 | 12 |
| 1 | 17 | 5 | 21 | 9 | 25 | 13 |
| 2 | 18 | 6 | 22 | 10 | 26 | 14 |
| 3 | 19 | 7 | 23 | 11 | 27 | 15 |
| 4 | 20 | 8 | 24 | 12 | 28 | 16 |
| 5 | 21 | 9 | 25 | 13 | 1 | 17 |
| 6 | 22 | 10 | 26 | 14 | 2 | 18 |
| 7 | 23 | 11 | 27 | 15 | 3 | 19 |
| 8 | 24 | 12 | 28 | 16 | 4 | 20 |
| 9 | 25 | 13 | 1 | 17 | 5 | 21 |

Table of the Dominical Letters with the Solar Cycle (continued)

(Continuation of Tabula V, begun on the preceding leaf; folio 592. The page carries no fresh "TABVLA" rubric — only the two part-headings "ANNI CENTESIMI" and "LITERÆ DOMINICALES," with the side-label "ANNI CYCLI SOLARIS.")

ANNI CENTESIMI [Centesimal (century) Years]

The century-year argument, arranged in seven columns; column *k* of centuries stands above the dominical-letter column *k* of the grid below. "& sic infinitum." (and so on to infinity) heads the fourth column, marking continuation of the series beyond the tabulated centuries.

| I | II | III | IV | V | VI | VII |
|------|------|------|------------------|------|------|------|
| 8100 | 8200 | 8400 | & sic infinitum. | 7700 | 7800 | 8000 |
| 7200 | 7300 | 8300 | 7600 | 6800 | 6900 | 7900 |
| 7100 | 6400 | 7400 | 7500 | 6700 | 6000 | 7000 |
| 6200 | 6300 | 6500 | 6600 | 5800 | 5900 | 6100 |
| 5300 | 5400 | 5600 | 5700 | 4900 | 5000 | 5200 |
| 4400 | 4500 | 5500 | 4800 | 4000 | 4100 | 5100 |
| 4300 | 3600 | 4600 | 4700 | 3900 | 3200 | 4200 |
| 3400 | 3500 | 3700 | 3800 | 3000 | 3100 | 3300 |

| I | II | III | IV | | V | VI | VII |
|------|------|------|------|--|------|------|------|
| 2500 | 2600 | 2800 | 2900 | | 2100 | 2200 | 2400 |
| 1600 | 1700 | 2700 | 2000 | | | | 2300 |
| 1582 | | 1800 | 1900 | | | | |

LITERÆ DOMINICALES [Dominical Letters]

Side-label (reading up the left edge): **ANNI CYCLI SOLARIS** [Years of the Solar Cycle], numbering the 28 years of the solar cycle down the leftmost column. Each cell gives the year's Dominical letter; leap-year rows (1, 5, 9, 13, 17, 21, 25) carry two letters.

| Cycle yr | I | II | III | IV | V | VI | VII |
|----------|-----|-----|-----|-----|-----|-----|-----|
| 1 | b c | c d | d e | e f | f g | g A | A b |
| 2 | A | b | c | d | e | f | g |
| 3 | g | A | b | c | d | e | f |
| 4 | f | g | A | b | c | d | e |
| 5 | d e | e f | f g | g A | A b | b c | c d |
| 6 | c | d | e | f | g | A | b |
| 7 | b | c | d | e | f | g | A |
| 8 | A | b | c | d | e | f | g |
| 9 | f g | g A | A b | b c | c d | d e | e f |
| 10 | e | f | g | A | b | c | d |
| 11 | d | e | f | g | A | b | c |
| 12 | c | d | e | f | g | A | b |
| 13 | A b | b c | c d | d e | e f | f g | g A |
| 14 | g | A | b | c | d | e | f |
| 15 | f | g | A | b | c | d | e |
| 16 | e | f | g | A | b | c | d |
| 17 | c d | d e | e f | f g | g A | A b | b c |
| 18 | b | c | d | e | f | g | A |
| 19 | A | b | c | d | e | f | g |
| 20 | g | A | b | c | d | e | f |
| 21 | e f | f g | g A | A b | b c | c d | d e |

| Cycle yr | I | II | III | IV | V | VI | VII |
|----------|-----|-----|-----|-----|-----|-----|-----|
| 22 | d | e | f | g | A | b | c |
| 23 | c | d | e | f | g | A | b |
| 24 | b | c | d | e | f | g | A |
| 25 | g A | A b | b c | c d | d e | e f | f g |
| 26 | f | g | A | b | c | d | e |
| 27 | e | f | g | A | b | c | d |
| 28 | d | e | f | g | A | b | c |

(Folio 593.)

TABVLA VI. LITERARVM DOMInicalium sine cyclo Solari.

Table VI. Of the Dominical Letters, without the Solar Cycle.

ANNI CENTESIMI [Centesimal (century) Years] — argument block

The century-year argument for this table sets each century as a numeral **rotated 90°** within a dense two-band staggered grid (an upper and a lower band). "Et sic in infinitum." (and so on to infinity) heads the block, marking continuation beyond 5400; "detract. x. dieb." (*detractis decem diebus*, "ten days having been subtracted") is attached at the 1400/1500 reform boundary. The individual century numerals are legible, but the block's two-dimensional assignment of each century to one of the seven dominical-letter rows does **not** resolve reliably on the scan; the centuries read (grouped roughly as printed, order within a band approximate) are given below, while the assignment of each century to its letter-row is left unresolved.

- **Upper band:** 5400 · 5100 · 5200 · 4700 · 4800 · 4300 · 4400 · 3900 · 4000 · 3500 · 3600 · 3100 · 3200 · 2700 · 2800 · 2300 · 2400 · 1900 · 2000 · 1500 · 1600 · 1100 · 1200 · 1300 · 600 · [*Et sic in infinitum.*]
- **Lower band:** 5300 · 4900 · 5000 · 4500 · 4600 · 4100 · 4200 · 3700 · 3800 · 3300 · 3400 · 2900 · 3000 · 2500 · 2600 · 2100 · 2200 · 1700 · 1800 · 1400 [*detract. x. dieb.*] · 1000 · 900 · 700 · 800 · 500 · 400 · 300 · 200 · 100 · 0

Together the two bands enumerate every century year from 0 to 5400 (step 100), each assigned to its dominical-letter class.

Dominical-letter grid (7 rows × 9 columns)

Read against the ANNI CENTESIMI class (row) and the ANNI EXPANSI argument (column) below. Letters lower-case except capital A.

| Row | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----|---|---|---|---|---|---|---|---|---|
| 1 | c | b | A | g | f | e | d | c | b |
| 2 | b | A | g | f | e | d | c | b | A |
| 3 | A | g | f | e | d | c | b | A | g |
| 4 | g | f | e | d | c | b | A | g | f |
| 5 | f | e | d | c | b | A | g | f | e |
| 6 | e | d | c | b | A | g | f | e | d |
| 7 | d | c | b | A | g | f | e | d | c |

ANNI EXPANSI [Expanded (elapsed-within-century) Years]

The expanded-year argument, seven columns; multiples of 4 (leap years) are entered **twice** to carry the intercalary shift. Values transcribed as printed.

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 4 | 5 | 6 |
| 7 | 8 | 8 | 9 | 10 | 11 | 12 |
| 12 | 13 | 14 | 15 | 16 | 16 | 17 |
| 18 | 19 | 20 | 20 | 21 | 22 | 23 |
| 24 | 24 | 25 | 26 | 27 | 28 | 28 |
| 29 | 30 | 31 | 32 | 32 | 33 | 34 |
| 35 | 36 | 36 | 37 | 38 | 39 | 40 |
| 40 | 41 | 42 | 43 | 44 | 44 | 45 |
| 46 | 47 | 48 | 48 | 49 | 50 | 51 |
| 52 | 52 | 53 | 64 | 55 | 56 | 56 |
| 57 | 58 | 59 | 60 | 60 | 61 | 62 |
| 63 | 64 | 64 | 65 | 66 | 67 | 68 |
| 68 | 69 | 70 | 71 | 72 | 72 | 73 |
| 74 | 75 | 76 | 76 | 77 | 78 | 79 |
| 80 | 80 | 81 | 82 | 83 | 84 | 84 |
| 85 | 85 | 87 | 88 | 88 | 89 | 90 |

| | | | | | | |
|----|----|----|----|-----|-----|----|
| 91 | 92 | 92 | 93 | 94 | 95 | 96 |
| 96 | 97 | 98 | 99 | 100 | 100 | |

(Folio 594.)

TABVLA VII. INDICTIONVM.

Table VII. Of the Indictions.

ANNI CENTESIMI [Centesimal (century) Years]

Side-label reads up the left edge: **ANNI CENTESIMI**. The century years 0–6900 (step 100) in three columns; "& sic in infinitū." (and so on to infinity) heads the block. The three columns feed the three base indictions given immediately below.

| I | II | III |
|------|--------------------|------|
| 6900 | & sic in infinitū. | |
| 6600 | 6700 | 6800 |
| 6300 | 6400 | 6500 |
| 6000 | 6100 | 6200 |
| 5700 | 5800 | 5900 |
| 5400 | 5500 | 5600 |
| 5100 | 5200 | 5300 |
| 4800 | 4900 | 5000 |
| 4500 | 4600 | 4700 |
| 4200 | 4300 | 4400 |
| 3900 | 4000 | 4100 |
| 3600 | 3700 | 3800 |
| 3300 | 3400 | 3500 |
| 3000 | 3100 | 3200 |
| 2700 | 2800 | 2900 |
| 2400 | 2500 | 2600 |
| 2100 | 2200 | 2300 |
| 1800 | 1900 | 2000 |

| I | II | III |
|------|------|------|
| 1500 | 1600 | 1700 |
| 1200 | 1300 | 1400 |
| 900 | 1000 | 1100 |
| 600 | 700 | 800 |
| 300 | 400 | 500 |
| 0 | 100 | 200 |

Indictiones centesimorum. [Indictions of the centesimal years]

The base indiction of each century column above.

| I | II | III |
|---|----|-----|
| 3 | 13 | 8 |

Indictiones annorum expansorum. [Indictions of the expanded years]

The three columns correspond to the three century-indiction bases (3, 13, 8); each row adds the expanded-year contribution (1–15). Columns I and II are reduced modulo 15 (values wrap 15→1); column III is left as the raw sum (base 8 + 1...15 = 9...23, un-reduced), as printed.

| I | II | III |
|----|----|-----|
| 4 | 14 | 9 |
| 5 | 15 | 10 |
| 6 | 1 | 11 |
| 7 | 2 | 12 |
| 8 | 3 | 13 |
| 9 | 4 | 14 |
| 10 | 5 | 15 |
| 11 | 6 | 16 |
| 12 | 7 | 17 |
| 13 | 8 | 18 |
| 14 | 9 | 19 |
| 15 | 10 | 20 |
| 1 | 11 | 21 |

| I | II | III |
|---|----|-----|
| 2 | 12 | 22 |
| 3 | 13 | 23 |

ANNI EXPANSI [Expanded (elapsed-within-century) Years]

Side-label reads up the left edge: **ANNI EXPANSI**. The expanded years 1–100 laid out in seven columns of fifteen (last two columns run short).

| | | | | | | |
|----|----|----|----|----|----|-----|
| 1 | 16 | 31 | 46 | 61 | 76 | 91 |
| 2 | 17 | 32 | 47 | 62 | 77 | 92 |
| 3 | 18 | 33 | 48 | 63 | 78 | 93 |
| 4 | 19 | 34 | 49 | 64 | 79 | 94 |
| 5 | 20 | 35 | 50 | 65 | 80 | 95 |
| 6 | 21 | 36 | 51 | 66 | 81 | 96 |
| 7 | 22 | 37 | 52 | 67 | 82 | 97 |
| 8 | 23 | 38 | 53 | 68 | 83 | 98 |
| 9 | 24 | 39 | 54 | 69 | 84 | 99 |
| 10 | 25 | 40 | 55 | 70 | 85 | 100 |
| 11 | 26 | 41 | 56 | 71 | 86 | |
| 12 | 27 | 42 | 57 | 72 | 87 | |
| 13 | 28 | 43 | 58 | 73 | 88 | |
| 14 | 29 | 44 | 59 | 74 | 89 | |
| 15 | 30 | 45 | 60 | 75 | 90 | |

TABLE VIII. OF THE MOVABLE FEASTS

TABVLA VIII. FESTORVM MOBILIVM. **

The table is keyed by the golden number of the old (Julian) calendar and by the epact. For each Dominical letter it gives the calendar dates of the principal movable feasts: Septuagesima Sunday, Ash Wednesday, Easter Sunday, Ascension, Pentecost, Corpus Christi, the number of Sundays after Pentecost, and the First Sunday of Advent. Month abbreviations are transcribed as printed (Ian.

= January, Febr. = February, Mar. = March, Apr. = April, Maij = May, Iunij = June, Nou. = November, Dec. = December).

Column headers, verbatim (with gloss):

1. **Aur. Num Calend. vet.** — Golden number, old calendar
2. **Epactæ** — Epacts
3. **Lit. Dom.** — Dominical letter
4. **Dominica Septuagesimæ** — Septuagesima Sunday
5. **Dies Cinerum** — Ash Wednesday
6. **Dominica Paschæ** — Easter Sunday
7. **Dies Ascensionis** — Ascension Day
8. **Dom. Pentecostes** — Pentecost Sunday
9. **Corpus Christi** — Corpus Christi
10. **Dom. post Pentecost.** — Sundays after Pentecost
11. **Dominica prima Adventus** — First Sunday of Advent

| Aur.
Num
Calend.
vet. | Ep
act
æ | Li
t.
D
o
m
. | Domini
ca
Septuag
esimæ | Die
s
Cin
eru
m | Dom
inica
Pasc
hæ | Dies
Asce
nsio
nis | Dom.
Pent
ecost
es | Cor
pus
Chri
sti | Dom.
post
Pentec
ost. | Dominic
a prima
Advent
us |
|--------------------------------|----------------|------------------------------|----------------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|---------------------------|--------------------------------|------------------------------------|
| 16 | xxi
ij | | | | | | | | | |
| 5 | xxi
j | d | 18. Ian. | 4.
Fe
br. | 22.
Mar. | 30.
Apr. | 10.
Maij | 21.
Mai
j | 28 | 29 Nou. |
| | xxj | e | 19 | 5 | 23 | 1.
Maij | 11 | 22 | 28 | 30 Nou. |
| 13 | xx | f | 20 | 6 | 24 | 2 | 12 | 23 | 28 | 1 Dec. |
| 2 | xix | g | 21 | 7 | 25 | 3 | 13 | 24 | 28 | 2 Dec. |
| | xvi
ij | A | 22 | 8 | 26 | 4 | 14 | 25 | 28 | 3 Dec. |
| 10 | xvi
j | b | 23 | 9 | 27 | 5 | 15 | 26 | 27 | 27 Nou. |
| | xvj | c | 24 | 10 | 28 | 6 | 16 | 27 | 27 | 28 Nou. |
| 18 | xv | d | 25 | 11 | 29 | 7 | 17 | 28 | 27 | 29 Nou. |

| Aur.
Num
Calend.
vet. | Ep
act
æ | Li
t.
D
o
m
. | Domini
ca
Septuag
esimæ | Die
s
Cin
eru
m | Dom
inica
Pasc
hæ | Dies
Asce
nsio
nis | Dom.
Pent
ecost
es | Cor
pus
Chri
sti | Dom.
post
Pentec
ost. | Dominic
a prima
Advent
us |
|--------------------------------|----------------|------------------------------|----------------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|---------------------------|--------------------------------|------------------------------------|
| 7 | xiii
j | e | 26 | 12 | 30 | 8 | 18 | 29 | 27 | 30 Nou. |
| | xiiij | f | 27 | 13 | 31 | 9 | 19 | 30 | 27 | 1 Dec. |
| 15 | xij | g | 28 | 14 | 1.
Apr. | 10 | 20 | 31 | 27 | 2 Dec. |
| 4 | xj | A | 29 | 15 | 2 | 11 | 21 | 1.
Iuni
j | 27 | 3 Dec. |
| | x | b | 30 | 16 | 3 | 12 | 22 | 2 | 26 | 27 Nou. |
| 12 | ix | c | 31 | 17 | 4 | 13 | 23 | 3 | 26 | 28 Nou. |
| 1 | viiij | d | 1. Feb. | 18 | 5 | 14 | 24 | 4 | 26 | 29 Nou. |
| | vij | e | 2 | 19 | 6 | 15 | 25 | 5 | 26 | 30 Nou. |
| 9 | vj | f | 3 | 20 | 7 | 16 | 26 | 6 | 26 | 1 Dec. |
| | v | g | 4 | 21 | 8 | 17 | 27 | 7 | 26 | 2 Dec. |
| 17 | iiiij | A | 5 | 22 | 9 | 18 | 28 | 8 | 26 | 3 Dec. |
| 6 | iiij | b | 6 | 23 | 10 | 19 | 29 | 9 | 25 | 27 Nou. |
| | ij | c | 7 | 24 | 11 | 20 | 30 | 10 | 25 | 28 Nou. |
| 14 | j | d | 8 | 25 | 12 | 21 | 31 | 11 | 25 | 29 Nou. |
| 3 | * | e | 9 | 26 | 13 | 22 | 1.
Iunij | 12 | 25 | 30 Nou. |
| | xxi
x | f | 10 | 27 | 14 | 23 | 2 | 13 | 25 | 1 Dec. |
| 11 | xx
viiij | g | 11 | 28 | 15 | 24 | 3 | 14 | 25 | 2 Dec. |
| | xx
vij | A | 12 | 1.
Ma
r. | 16 | 25 | 4 | 15 | 35
[recte:
25] | 3 Dec. |
| 19 | 25 /
xx | b | 13 | 2 | 17 | 26 | 5 | 16 | 24 | 27 Nou. |

| Aur.
Num
Calend.
vet. | Ep
act
æ | Li
t.
D
o
m
. | Domini
ca
Septuag
esimæ | Die
s
Cin
eru
m | Dom
inica
Pasc
hæ | Dies
Asce
nsio
nis | Dom.
Pent
ecost
es | Cor
pus
Chri
sti | Dom.
post
Pentec
ost. | Dominic
a prima
Advent
us |
|--------------------------------|-------------------------------|------------------------------|----------------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|---------------------------|--------------------------------|------------------------------------|
| 8 | vj
xx
v /
xxi
iij | c | 14 | 3 | 18 | 27 | 6 | 17 | 24 | 28 Nou. |
| | | d | 15 | 4 | 19 | 28 | 7 | 18 | 24 | 29 Nou. |
| | | e | 16 | 5 | 20 | 29 | 8 | 19 | 24 | 30 Nou. |
| | | f | 17 | 6 | 21 | 30 | 9 | 20 | 24 | 1 Dec. |
| | | g | 18 | 7 | 22 | 31 | 10 | 21 | 24 | 2 Dec. |
| | | A | 19 | 8 | 23 | 1. | 11 | 22 | 24 | 3 Dec. |
| | | | | | | Iunij | | | | |
| | | b | 20 | 9 | 24 | 2 | 12 | 23 | 23 | 27 Nou. |
| | | c | 21 | 10 | 25 | 3 | 13 | 24 | 23 | 28 Nou. |

TABLE IX. OF FINDING THE TIME DURING WHICH THE MOON SHINES BY NIGHT

** The whole table is set within a decorative border of printer's ornaments;
FINIS. stands within the frame at its foot.

Tabula ix. inventionis temporis, quo Luna noctu lucet. — "Table 9, of finding the time during which the Moon shines by night." (The chapter numeral is set as lowercase ix.)

Column headers, verbatim (with gloss):

1. **Ætas Lunæ ante Plenilunium.** — Age of the Moon before full moon; sub-head **Dies** (days)
2. **Horæ inæquales, quibus Luna lucet** — Unequal (seasonal) hours during which the Moon shines; sub-head **H. inæqu.**

3. **Ætas Lunæ post Plenilunium.** — Age of the Moon after full moon; sub-head **Dies** (days)

| Ætas Lunæ ante
Plenilunium (Dies) | Horæ inæquales (H.
inæqu.) | Ætas Lunæ post
Plenilunium (Dies) |
|--------------------------------------|-------------------------------|--------------------------------------|
| 0 | 0 | 30 |
| 1 | $\frac{4}{5}$ | 29 |
| $1\frac{1}{4}$ | 1 | $28\frac{3}{4}$ |
| 2 | $1\frac{3}{5}$ | 28 |
| $2\frac{1}{2}$ | 2 | $27\frac{1}{2}$ |
| 3 | $2\frac{2}{5}$ | 27 |
| $3\frac{3}{4}$ | 3 | $26\frac{1}{4}$ |
| 4 | $3\frac{1}{5}$ | 26 |
| 5 | 4 | 25 |
| 6 | $4\frac{4}{5}$ | 24 |
| $6\frac{1}{4}$ | 5 | $23\frac{3}{4}$ |
| 7 | $5\frac{3}{5}$ | 23 |
| $7\frac{1}{2}$ | 6 | $22\frac{1}{2}$ |
| 8 | $6\frac{2}{5}$ | 22 |
| $8\frac{3}{4}$ | 7 | $21\frac{1}{4}$ |
| 9 | $7\frac{1}{5}$ | 21 |
| 10 | 8 | 20 |
| 11 | $8\frac{4}{5}$ | 19 |
| $11\frac{1}{4}$ | 9 | $18\frac{3}{4}$ |
| 12 | $9\frac{3}{5}$ | 18 |
| $12\frac{1}{2}$ | 10 | $17\frac{1}{2}$ |
| 13 | $10\frac{2}{5}$ | 17 |
| $13\frac{3}{4}$ | 11 | $16\frac{1}{4}$ |
| 14 | $11\frac{1}{5}$ | 16 |
| 15 | 12 | 15 |

FINIS.

(This FINIS. closes the tabular Second Part — and with it the whole Exposition of the Calendar. The chapter index follows.)

INDEX OF CHAPTERS of the Exposition of the Calendar

INDEX CAPITVM Explicationis Calendarij. **

(Ornamental initial E.)

[E]PISTOLA to the Reader.

PREFACE to the whole work. — Page 1

A compendium of the new method of restoring the Calendar, sent by Gregory XIII to the Christian princes and the more renowned universities, in the year of our Lord 1577. — 3

The perpetual **GREGORIAN CALENDAR**, set before the whole Christian world by Gregory XIII, Supreme Pontiff, in the year 1582. — page 13

- **I.** What Scripture prescribes concerning the celebration of Easter, and what the holy Fathers and Councils have decreed about it. — 53
- **II.** Why the Calendar had to be corrected, and in what its correction consists. — 63
- **III.** Why the vernal equinox was brought back specifically to 21 March, and by what reasoning. — 64
- **IIII.** Why the Church, setting aside the true or apparent motions, employs in the celebration of the movable feasts only the mean (that is, equal) motions — or rather the cycles. — 66
- **V.** What method of intercalation is applied so that the equinox may be kept near 21 March, to which it has been brought back. — 69
- **VI.** On the period of the anomaly of the equinoxes and of the inequality of the years, from the doctrine of Nicolaus Copernicus [Nicolai Copernici]. — 75
- **VII.** Various doubts are resolved concerning the formula for equating the solar year prescribed in the new Calendar. — 81
- **VIII.** How the nineteen-year cycle of the golden number equalizes 19 solar years. — 75
- **IX.** How the golden numbers are arranged in the Calendar, and why, once they are removed, the epacts are substituted in their place. — 88
- **X.** By what device the epacts are set out in the Calendar. — 101

- **XI.** The construction of the expanded table of epacts, and of the table for equating those same epacts, according to the mind of the Calendar's author. — 105
- **XII.** The finding of the golden number and of the epact for any given year; likewise the correction of the equation-table set out in the preceding chapter according to the view of Lilius [Lilij; Aloysius Lilius]. — 133
- **XIII.** On the calculation of the new moons and full moons by means of the true epacts. — 168
- **XIIII.** On an easier calculation of the mean new moons and full moons, by means of the mean new moons computed over 76 years. — 174
- **XV.** On the thirty calendars of golden numbers, answering to the thirty lines of the expanded table of epacts. — 254
- **XVI.** The lunations of all thirty cycles of the expanded epact-table, resolved into their quantities throughout the whole year in the order they keep in the Calendar month by month. — 304
- **XVII.** On the embolisms, and on the "leap" of the Moon, as they call it. — 335
- **XVIII.** What the fourteenth Moon is; and why the epacts are so arranged and equated in the Calendar that their mean new moons for the most part follow the true conjunctions of the luminaries. — 346
- **XIX.** Various doubts are resolved concerning the setting-out of the epacts in the Calendar and their equation; and at the same time it is the more confirmed that the epacts have been most correctly set out and equated in the Calendar. — 353
- **XX.** Finding the solar cycle for any given year. — 361
- **XXI.** Finding the Dominical letter. — 365
- **XXII.** Finding the movable feasts. — 375
- **XXIII.** That the most holy Easter is to be celebrated on one and the same day in all parts of the world. — 505
- **XXIIII.** The calendar of François Viète [Francisci Vietæ] is examined and refuted. — 505
- **XXV.** On another method of computing the mean Paschal new moons and full moons after the correction of the year. — 530
- **XXVI.** On yet another new and very easy method of computing the mean Paschal new moons and full moons after the correction of the year. — 537
- **XXVII.** Others who assailed the Gregorian Calendar are refuted. — 540

- **XXVIII.** On the calculation of the lunations up to the fourths [usque ad Quarta(s)]. — 551

Index

Index of the Chapters of the First Part of the *Computus Ecclesiasticus*

[INDEX CAPITVM PRIMÆ PARTIS Computi Ecclesiastici.]

(Page references are transcribed verbatim; additive Roman forms — e.g. *IIII* — are kept as printed.)

- Preface [*Praefatio*]. — **562**
- I. Chapter. On the golden number [*De aureo numero*]. — **562**
- II. On the epacts, the new moons, the age of the Moon, and the Martyrology letter [*De Epactis, Nouilunijs, Ætate Lunæ, & Litera Martyrologij*]. — **564**
- III. On the solar cycle, that is, the cycle of Dominical letters of 28 years [*De Cyclo Solari, siue literarum Dominicalium 28. annorum*]. — **569**
- IIII. On the Dominical letter [*De litera Dominicali*]. — **571**
- V. On bissextile years and common years — the centesimal ones as well as the non-centesimal — and on the number of days exempted, for the equation of the solar year, up to any given time whatever [*De annis bissextilibus, communibusque tum centesimis, tum non centesimis, & numero dierum, ob æquationem anni Solaris, usque ad datum quodcunque tempus exemptorum*]. — **575**
- VI. On the movable feasts [*De festis mobilibus*]. — **576**
- VII. On the Advent of the Lord [*De Aduentu Domini*]. — **579**
- VIII. On the number of Sundays between Pentecost and the Advent of the Lord. — **580**
- IX. From what day of the week any given day of the month is named in any proposed year, whether that day comes earlier or not. — **580**
- X. On the Nones, the Ides, and the Kalends [*De Nonis, Idibus, & Calendis*]. — **581**
- XI. On the Indiction [*De Indictione*]. — **582**
- XII. On the place of the Sun in the Zodiac [*De loco Solis in Zodiaco*]. — **583**
- XIII. On the place of the Moon in the Zodiac, and for how many hours it shines at night. — **584**

Index of the Rules and Tables of the Second Part of the *Computus Ecclesiasticus*

[*INDEX REGVLARVM, ET TABVLARVM secundæ partis Computi Ecclesiastici.*]

- Finding the golden number from Table 1. — **585**
- Finding the epact from Table 2. — **585**
- Finding the Martyrology letter from the perpetual cycle of epacts. — **585**
- Finding the new moons and the age of the Moon from Table 3. — **585**
- Finding the solar cycle from Table 4. — **586**
- Finding the Dominical letter, both from Table 5 and from Table 6. — **586**
- Finding the Indiction from Table 7. — **586**
- Finding the movable feasts from Table 8. — **586**
- Finding the time at which the Moon shines at night, from Table 9. — **587**
- I. Table for finding the golden numbers. — **588**
- II. Table for finding the epacts. — **589**
- III. Perpetual table for finding the new moons of the whole year. — **590**
- IIII. Table for finding the solar cycle. — **591**
- V. Table for finding the Dominical letters from the solar cycle. — **592**
- VI. Table for finding the Dominical letters without the solar cycle. — **593**
- VII. Table for finding the Indiction. — **594**
- VIII. Table for finding the movable feasts. — **595**
- IX. Table for finding the time at which the Moon shines at night. — **596**

Index of the Principal Matters Explained in Each Chapter

[*INDEX RERVM PRÆCIPVARVM quæ in quolibet capite explicantur.*]

In the Letter to the Reader [*In Epistola ad Lectorem*]

(*These entries carry no page references in the source.*)

- Aloysius Lilius [Luigi Lilio] the first author of the new Gregorian calendar.
- Why the author of this book dissents from Aloysius Lilius in most matters.
- What in particular the author of this book has added to the calendar of Aloysius Lilius.
- Why this burden of writing was imposed on the author of this book above all others.

In the Prooemium [*In Prooemio*]

- Two kinds of feast days are celebrated by the Church. — **Page 1**
- For celebrating the immovable feasts, only the use of the solar months is necessary. — **1**
- For celebrating the movable feasts, both the solar and the lunar months are necessary. — **1**
- Why both the solar and the lunar year needed correction. — **1**
- That many Roman Pontiffs and Councils desired no small correction of the calendar. — **1**
- Who chiefly detected the errors of the calendar of the Council of Nicaea, and wrote on their emendation. — **1**
- That no one before Gregory XIII attained a perfect correction of the calendar, and why. — **1**
- That most held that a perpetual lunar cycle could not be described in the calendar, nor a stable seat be assigned to the equinox. — **1**
- That Aloysius Lilius alone, whom Gregory XIII followed, described a perpetual lunar cycle in the calendar and at the same time assigned a stable seat to the equinox. — **1**
- The order which the author of this book follows. — **2**

In the Compendium of the New Method of restoring the Calendar, [issued] by Gregory XIII, Supreme Pontiff, sent to the Christian Princes and to the more celebrated Academies, in the year of the Lord 1577

[*In Compendio Novæ Rationis restituendi Calendarium à Greg. XIII. P. O. M. ad Principes Christianos, celebrioribusq; Academiis missum, anno Domini 1577.*]

- For what reason Gregory XIII sent this Compendium of the new method of restoring the calendar to the Princes. — **3**
- When Easter is to be celebrated by the decree of the Council of Nicaea. — **3**
- That the seat of the equinox was fixed on 21 March by the Fathers of the Council of Nicaea. — **3**
- That the Fathers of the Council of Nicaea determined that the 14th moon [Luna xiiii] was to be found from the golden number. — **3**
- That the equinox had deserted its seat. — **3**
- That the 14th moon [Luna xiiii] was falsely indicated by the golden number before the correction. — **3**

- That several supreme Pontiffs attempted to emend the error of the equinox and of the 14th moon. — **3**
- That it is difficult to ascribe a stable seat to the equinox, on account of the uncertain and variable magnitude of the tropical year [*anni vertentis*]. — **3**
- What remedy Aloysius Lilius devised for affixing a stable seat to the equinox. — **3**
- The interruption of the cycle of Dominical letters, devised by Aloysius Lilius from his plan for equalizing the equinox. — **4**
- Why the golden number cannot perpetually indicate the Paschal 14th moon [Luna xiiii] in the calendar. — **4**
- That the decemnovennal [19-year] cycle of epacts can perpetually show the Paschal 14th moon in the calendar, if at certain times an equation is applied. — **4**
- The calendar of Aloysius Lilius with the cycle of epacts. — **5**
- By what means the equation of the epacts was instituted by Aloysius Lilius, according to the Alphonsine year. — **9**
- The expanded table of epacts of Aloysius Lilius, with the little table of the equation of the same epacts. — **9 & 10**
- The use of the equation of the epacts, as instituted according to Aloysius Lilius. — **10**
- A little table of some temporary epacts according to Aloysius Lilius, and their use. — **11**
- That Aloysius Lilius perfected a wholly complete table of the movable feasts. — **11**
- That the cycle of epacts inscribed in the calendar can be accommodated to any magnitude of the year whatever. — **11**
- By what reasoning the equation of the epacts is to be instituted according to the varying magnitude of the year, following the opinion of Nicolaus Copernicus [Nicolaus Copernicus]. — **12**
- An exhortation to mathematicians to devote themselves to the care of emending the calendar. — **12**
- That Gregory XIII set himself to follow the consensus of the whole Christian world in this business of correction. — **12**

In the Gregorian Calendar, perpetual, which was proposed to the whole world in the year 1582 by Gregory XIII

[In Calendario Gregoriano perpetuo, quod anno 1582. à Gregorio XIII. toti orbi propositum est.]

- The Bull of Gregory XIII on the corrected calendar. — **13**
- Canon 1. On the decemnovential cycle of the golden number. — **16**
- Finding the golden number by table. — **17**
- Finding the golden number by arithmetic. — **18**
- Canon 2. On the epacts and the new moons. — **18**
- A little table of the epacts corresponding to the golden numbers before the correction of the calendar. — **18**
- A little table of some temporary epacts corresponding to the golden numbers after the correction of the calendar. — **19**
- That by mature counsel the new moons in the calendar were placed after the celestial new moons. — **20**
- The perpetual little table of the cycle of epacts, with the table of the equation of the same cycle. — **20**
- Finding the epact from the perpetual cycle. — **20**
- Canon 3. On the solar cycle, that is, the cycle of Dominical letters of 28 years. — **22**
- Finding the solar cycle from the table which begins at the year of correction 1582. — **23**
- Finding the solar cycle by table, in any proposed year whatever. — **23**
- Finding the solar cycle by arithmetic. — **23**
- Canon 4. On the Dominical letter. — **24**
- Finding the Dominical letter from the year of correction up to the year 1700 exclusive. — **24**

- The little table of Dominical letters, perpetual from the year 1700 inclusive — provided that in every 400 years three bissextiles are omitted — together with the table of the equation of the same little table. — **25**
- Finding the Dominical letter from the aforesaid table, in any proposed year after the year 1700. — **25**
- The construction of the temporary table of Dominical letters for any proposed century. — **26**
- The old solar cycle, that is, the cycle of Dominical letters of 28 years, perpetual, with the table of the equation of the same cycle. — **27**
- Finding the Dominical letter from the perpetual solar cycle, in any proposed year. — **27**
- Canon 5. On the Indiction. — **28**
- Finding the Indiction from the year 1582. — **28**
- Finding the Indiction by table, in any year. — **28**
- Finding the Indiction by arithmetic. — **29**
- Canon 6. On the movable feasts. — **29**
- Finding Easter in the calendar by means of the epact and the Dominical letter, together with the other movable feasts. — **29**
- Finding the movable feasts from the twofold perpetual table. — **29**
- A temporary little table of the movable feasts, from the year 1582 up to the year 1631. — **32**
- The Paschal table, that is, the old table of movable feasts, reformed and perpetual. — **33**
- The Paschal table, that is, the new table of movable feasts, reformed and perpetual. — **34**
- The Gregorian calendar with the epacts distributed through the days of the months. — **36**
- A canon on the Gregorian calendar for the year of correction 1582. — **48**
- The last three months of the year of correction 1582. — **49**

- What is to be observed if the correction of the calendar does not take place in the year 1582. — 52

In Chapter I [*In Capite I*]

- The precept concerning the celebration of Easter, from Sacred Scripture. — 53
- When the Jews celebrated the Passover [*Pascha*] by divine precept. — 53
- Which is the first month of the Jews. — 54
- Why the Church preferred Easter to be movable rather than fixed. — 54
- That the first Sunday after the 14th moon [*Luna xiiij*] of the first month is to be celebrated as the Christian Easter. — 54
- The decree of St. Pius, Pope and martyr, on the celebration of Easter on the Lord's Day. — 55
- The decree of St. Victor, Pope, on the celebration of Easter on the Lord's Day after the 14th moon of the first month. — 55
- The decree of the Council of Caesarea in Palestine on the celebration of Easter after the 14th moon of the first month. — 55
- A fragment of the epistle of the Council of Nicaea on the celebration of Easter. — 55
- The decree of the Council of Nicaea on the celebration of Easter is confirmed from the Council of Antioch, of Chalcedon, and others. — 55
- That the Council of Nicaea confirmed, rather than instituted, that Easter is to be celebrated on the Sunday after the 14th moon. — 55
- The opinion of Bede [*Bede*]: that the Council of Nicaea renewed the ecclesiastical decree on the celebration of Easter after the 14th moon of the first month, on the Lord's Day. — 56
- The opinion of St. Ambrose on the celebration of Easter, from the decree of the Council of Nicaea. — 56
- That the care of the cycle of the golden number was given by the Council of Nicaea to Eusebius of Caesarea [*Eusebius of Caesarea*] and to the Alexandrians. — 56
- That the custom of celebrating Easter on the Sunday after the 14th moon of the first month began in the times of the Apostles, and is an Apostolic tradition. — 56
- That Easter has always been, and ought to be, celebrated on the first Sunday after the 14th moon, even if that Sunday falls on the 15th moon [*Luna xv*] — against certain persons who deny it. — 57

- The error of certain persons in defining the first month. — **61**
- That that month is rightly called the first whose 14th moon falls on the day of the equinox, or next follows it. — **61**
- Three things to be observed in the celebration of Easter, from the decrees of the Pontiffs and the Councils. — **62**
- That the day 21 March was assigned to the vernal equinox by the Council of Nicaea. — **62**
- How many, and which, new moons are Paschal, by the decree of the Council of Nicaea. — **62**
- On how many days of the year, and on which, Easter can be celebrated, by the decree of the Council of Nicaea. — **62**
- That the new moons arranged by golden numbers in the calendar were investigated before the correction of the year, so that all might celebrate the new moons [*Neomenias*] on the same days. — **62**
- That the cycle of Dominical letters was devised so that there should be no dissension in celebrating the Lord's Day. — **62**

In Chapter II [*In Capite II*]

- That the equinox and the new moons, at the time when the calendar was being corrected by Gregory XIII, did not fall on the same days on which they occurred at the time of the Council of Nicaea. — **63**
- What lunations — Paschal according to the Council of Nicaea — were rejected as though non-Paschal, before the correction of the calendar, on account of the error of the equinox. — **63**
- When Easter was celebrated in the second month before the correction, on account of the error of the equinox. — **63**
- That, had the calendar not been corrected, it would have come about after some years that Easter would always be celebrated in the second month, the third, the fourth, and so on, on account of the advance of the equinox toward the beginnings of the months. — **63**
- When Easter was celebrated before the correction on the 25th moon [*Luna xxv*], on account of the error of the new moons found by golden numbers. — **63**
- That, had the calendar not been corrected, Easter would have happened to be celebrated at the new moon — on the 2nd moon, the 3rd, and so on — on account of the error of the new moons which were sought by golden numbers. — **63**

- That, on account of the error of the equinox and of the 14th moon found from the golden numbers, an error of 7, or 28, or 35 days often occurred in the celebration of Easter before the emendation of the calendar. — **63**
- That an error of 42 days and more would have come to be committed in the celebration of Easter after many years, had the calendar not been corrected. — **63**
- The disadvantages for histories, for chronology, and for the principal celebrations of the year, if the calendar had not been emended. — **63**
- The necessity of the correction of the calendar. — **64**
- That the correction of the calendar consists in three things, and what these are. — **64**

In Chapter III [*In Capite III*]

- Various opinions on the restitution of the equinox. — **64**
- Which opinion Gregory XIII followed in restoring the equinox. — **65**
- The disadvantages of the other opinions on the restitution of the equinox. — **ibid.**
- By what reasoning the vernal equinox was restored to 21 March. — **ibid.**
- That the year 1582 must be called the year of correction, because in it the correction of the calendar of Gregory XIII was made. — **ibid.**
- Why 10 days were exempted at once from the year 1582, and not single days from single years or months. — **ibid.**
- Why the equinox anticipates its seat in the calendar. — **ibid.**
- The magnitude of the year according to Julius Caesar [Julius Caesar] and the Church. — **ibid.**
- The magnitude of the year according to the Alphonsines [the Alphonsine astronomers]. — **ibid.**

Index

(Continuation of the Index Rerum Præcipuarum — the subject index of "the principal matters explained in each chapter." Page references are transcribed verbatim off the leaf; "ibid." is preserved; additive Roman forms — e.g. IIII, xiiij — are kept as printed. The doubled-epact distinction is load-bearing and preserved exactly as set: Arabic 25/19/30 versus Roman xxv/xxiiij/xxvi/xx.)

In Chapter IIII [*In Capite IIII*]

(The first six entries on this leaf still belong to Chapter III, standing above the Chapter IIII rubric.)

- When the year is at its greatest, when at its least, and when it holds a middle measure. — 65
- By how much the Roman, or Ecclesiastical, year is greater than the Alphonsine year. — 65
- In how many years the equinox anticipates by one day, according to the Alphonsine year. — 65
- Why the correction of the calendar was instituted in the year 1582, and in October rather than in any other year or month. — 65
- Why in the year 1583, in the more remote regions, the correction was ordered to be made in February rather than in another month. — 66
- That the new calendar, had it been corrected in February of the year 1582, would have shown Easter more correctly than the old one. — 66
- That the Church considers only the mean motions, for many reasons. — 66
- 1st reason. Because the mean motions are equal and uniform, and therefore suited to the grasp of ordinary people, whereas the true motions are unequal and irregular. — 66
- 2nd. Lest a perpetual seedbed of quarrels and discord be stirred up in the Church, if the true motions were observed, on account of the variety of the astronomical tables. — 67
- 3rd. Because no tables have been constructed to this day that would exhibit the true motions without error for many years. — 67
- 4th. Because even if the most perfect astronomical tables existed, the true motions would still be inscribed in vain, on account of the variety of meridians. — 68
- 5th. Because it is the most ancient custom of the Church to observe the mean motions, not the true ones — a custom that ought not to be changed without pressing cause. — 68

- 6th. Because various writers and computists testify that it must be done thus. — **69**
- Why the Prutenic Tables [tabulæ Prutenicæ], which today are used by everyone, can be shown to be uncertain. — **67**
- That some astronomers, in the motion of the Sun and Moon, trust the Alphonsine Tables more than the Prutenic. — **67**
- That 10 days were rightly removed to restore the equinox to 21 March — confirmed by the observations of a certain more recent mathematician. — **76**
- That the astronomical tables are to be greatly valued, even though they cannot last for a long time. — **67**
- The source of the inconstancy of the astronomical tables. — **67**
- That it matters little, as far as the feast-day of Easter is concerned, if the equinox does not always fall on 21 March itself. — **68**
- That God through Moses enjoined the observance of the first month, and of the 10th day and the 14th, in a rustic — that is, simple — manner, suited to the grasp of the whole people of Israel. — **68**
- That the Church is not much concerned with the true or mean new moons and full moons, since in investigating them it has always used cycles. — **68**
- That in employing the lunar cycle the Church imitates all antiquity. — **69**
- That the mean motions are useful for judging which cycle out of several more correctly shows the 14th moons [Lunas xiiij] in the calendar. — **69**

In Chapter V [*In Capite V*]

- What method of intercalation was applied so that the equinox might be preserved near 21 March. — **69**
- What the astronomical year is. — **69**
- What the civil year is. — **70**
- That the astronomical year does not always begin from the same moment of the same day. — **ibid.**
- That knowledge of the astronomical year is necessary in order to equalize the civil year. — **ibid.**

- Why every fourth year is bissextile. — **ibid.**
- That the equinox, if all years were common, would run through all the days of the year in 1460 years. — **ibid.**
- That the intercalation of one day every fourth year is greater than it ought to be, and why. — **ibid.**
- What is to be done so that the equinox does not anticipate. — **ibid.**
- The magnitude of the year according to Ptolemy [Ptolemy]. — **ibid.**
- The magnitude of the year according to al-Battānī [Albategnius]. — **ibid.**
- The magnitude of the year according to the Alphonsines. — **ibid.**
- That the solar year is not always of the same magnitude. — **ibid.**
- Copernicus's [Nicolaus Copernicus] observations on the inequality of the year. — **70**
- In how many years the intercalary day would have to be omitted according to Ptolemy's year. — **71**
- In how many years, according to al-Battānī's year, intercalation would have to cease. — **ibid.**
- In how many years the Alphonsine year requires the omission of one intercalary day. — **ibid.**
- Two ways of intercalating to keep the equinox on 21 March. — **ibid.**
- Which method of intercalation was chosen. — **ibid.**
- Why the mean magnitude of the year was assumed in the correction of the calendar. — **ibid.**
- That an unequal year is not suitable for establishing a method of intercalation. — **71**
- The source of the disputes over the celebration of Easter, from the Council of Nicaea down to the Emperor Justinian [Justinian I]. — **ibid.**
- Why the greatest year is not suitable for the equation of the solar year. — **ibid.**
- Why the least year is not fit for the equation of the solar year. — **ibid.**
- Why the mean year — that is, the Alphonsine — is alone fit for equalizing the solar year. — **ibid.**
- How the method of intercalation established for the mean year corrects itself. — **ibid.**
- That no inconvenience of any importance follows from the intercalation established for the mean year. — **72**
- A second reason why the magnitude of the mean year was assumed in the correction of the calendar. — **ibid.**

- The likeness between the mean conjunctions of the luminaries and the equation established for the mean year. — **ibid.**
- A doubt: that Easter is sometimes thrown back into the second month, and sometimes anticipates the first month, if the equation is established for the mean year. — **ibid.**
- The resolution of the doubt: that it is nothing new for Easter sometimes to be celebrated either in the second month or in the last, on account of the common and bissextile years. — **ibid.**
- That Easter was necessarily celebrated at times both in the second month and in the last, even in the very times of the Council of Nicaea. — **ibid.**
- That the Church does not contravene the decrees of the Fathers, even though it sometimes celebrates Easter either in the last month or in the second, since this can in no way be avoided. — **ibid.**
- The equinox is twofold: the astronomical or true, and the ecclesiastical or civil [Politicum]. — **73**
- Why it is not absurd for the ecclesiastical equinox sometimes to differ from the true one. — **ibid.**
- That the Church observes the equinox and the Moon freely in the celebration of Easter; and why it observes them. — **ibid.**
- That the peace of the faithful in the celebration of Easter is dearer to the Church than an exact observation of the equinox and of the course of the Moon. — **ibid.**

(Chapter V continues at the head of this leaf.)

- 3rd reason why the mean magnitude of the year was assumed in the correction of the calendar. — **73**
- How the equinox, if after some years it had entirely deserted 21 March, could be recalled to the same day. — **73**
- In what the perpetuity and perfection of the Gregorian calendar consists. — **73**
- That the new calendar is not called perpetual as though the equinox could never depart from 21 March, but for another reason. — **73**
- That the equinox cannot remain on the same day, on account of the six hours omitted each year. — **73**
- Why the new calendar is called perpetual. — **73**
- Why the centesimal years were chosen for equalizing the solar year. — **74**

- By what reasoning the omission of the intercalary day in the centesimal years — every four-hundredth being excepted — fits the Alphonsine year. — 74
- Which centesimal years will in future remain bissextile, and which will not, but will turn out common. — 74
- In how many years the equinox would slip by one day from 21 March toward the end of the month, if the Alphonsine year always held the middle place between the greatest and the least year. — 74
- The likeness between the intercalation every four-hundredth year and the customary intercalation every fourth year. — 74
- A doubt: that the equation does not seem rightly applied in the centesimal years, since it ought to be made every 134th year. — 74
- The resolution of the above doubt. — 74
- That the equation applied in the centesimal years preserves the equinox on the same day in the same manner as it is preserved by the intercalation every fourth year. — 74
- That the equation applied in the centesimal years is very similar to the equation of the Arabs in the lunar year. — 75

In Chapter VI [*In Capite VI*]

- When the period of the anomaly of the equinoxes [periodus anomalīæ æquinociorum] began before the birth of Christ, according to the teaching of Nicolaus Copernicus. — 76
- The radix of the period of the anomaly of the equinoxes. — 76
- In what year of Christ the period of the anomaly of the equinoxes will begin again. — 76
- When the true and the mean equinox coincide; when they differ most from each other; and when their difference is moderate. — 76
- When the tropical year [annus tropicus] is greatest, when least, and when moderate. — 76
- The confusion there would be among Christians, if the equation of the equinox were established according to the true motion. — 76
- That the uniform equation is attacked in vain by some. — 79
- That the equinox, according to the equation of the new calendar, does not depart far from 21 March, and therefore that this equation was rightly established for the Alphonsine year, which is the mean. — 79
- That the difference between the true and the mean equinox does not reach one and a half days. — 79

- When the mean equinox precedes or follows the true one. — 79
- How great is the greatest divergence between the true and the mean equinox. — 79
- What deceived some into thinking that the mean equinox could be as much as four whole days away from the true. — 79
- When the mean equinox occurs. — 79
- That the mean equinox does not occur when the line of the Sun's mean motion is joined with the point of the mean equinox. — 80
- Why a certain astronomer thought that the true equinox would slip to 27 March. — 80
- That the new calendar is perfect, even if the Prutenic Tables were still to agree with the true motions after 20,000 years. — 80
- Why, through the equation of the new calendar, the equinox in the heavens falls after 21 March more frequently than before the 21st. — 80
- That any equation whatever, apart from the one established for the Alphonsine year, dislodges the equinox from its proper seat further than it ought. — 81
- That the equation established for the mean year cannot rightly be censured. — 81

In Chapter VII [*In Capite VII*]

- Argument 1 against the new calendar, with its resolution. — 81
- That the Prutenic Tables were employed to restore the calendar. — 81
- That the inconstancy of the astronomical tables does not stand in the way of the perfection and perpetuity of the calendar. — 81
- In what the perfection of the new calendar consists. — 82
- Argument 2 against the new calendar, with its resolution. — 82
- That the restoration of the equinox to 21 March, through the omission of the intercalary day in the year 1700, is not a paying-off of one debt by contracting another [versura], as a certain person slanderously claims. — 82
- That the equinox, on account of the inequality of the year, departs from 21 March in both directions. — 82
- When the equinox rolls forward from the 21st to the 22nd and 23rd, and when it returns to the 21st; likewise when it retreats from the 21st to the 20th and 19th, and when it goes back from there to the 21st. — 82

- That 21 March, assigned to the equinox, holds the middle place between the 23rd and the 19th — the limits to which the equinox can run — since from there it returns of its own accord to the 21st. — **83**
- That in the new calendar Easter rarely falls into the last or the second month. — **83**
- That it is nothing new for Easter sometimes to fall into the last or the second month. — **83**
- That it ought not to be called an error if Easter is sometimes celebrated in the second month, since this cannot be avoided on account of the two days that the equinox requires — whether the new calendar be adopted or the old retained. — **83**
- That the calendar would not have needed correction if the equinox, having advanced to 11 March, had begun of its own accord to go back to the 21st, with no remedy applied. — **83**
- That the equinox's departure from the 21st has place only in the Prutenic Tables. — **83**
- Argument 3 against the new calendar, with its resolution. — **83**
- That the equation of the new calendar answers exactly to some past and future years, though not to all — which is enough. — **84**
- How the equation of the new calendar, carried back to the times of the Council of Nicaea, yields 10 days to be removed. — **84**
- How the equation of the new calendar, had it begun from the Council of Nicaea, would offer 10 days to be removed down to the year 1600. — **84**
- That the removal of 10 days was necessary in order to restore the equinox from the 11th to the 21st, whether or not the equation supplies 10 days to be removed as far back as the Council of Nicaea. — **84**
- A general reply to all the arguments that can be brought against the equation of the equinox. — **84**
- In what sense the equation of the new calendar is to be understood to agree with the mean equinox. — **84**
- Why the new calendar is called perpetual by the Pontiff. — **85**

(Chapter VII continues at the head of this leaf.)

- That no calendar can be constructed in any other way than that in which the Gregorian was constructed, such that it is perfect, perpetual, and lasting. — **85**
- What is required for any calendar to be called complete and lasting. — **85**

In Chapter VIII [*In Capite VIII*]

- What the civil lunar year is, of how many kinds, and how great. — **85**
- What the lunar year is — both common and embolismic, full and hollow. — **85**
- What the astronomical lunar year is, and how great, both common and embolismic. — **86**
- The magnitude of the astronomical lunar month according to the mean motion. — **86**
- How great the half and the quarter of the lunar month are. — **86**
- Meton the Athenian [Meton], inventor of the decemnovenial (19-year) cycle of the golden number. — **86**
- The Metonic decemnovenial year. — **86**
- The period of Callippus [Callippus] of 76 years. — **86**
- The magnitude of the civil lunar month. — **86**
- Why the lunations in the calendar are alternately of 30 and 29 days. — **86**
- Why the new moons in any year mostly occur 11 days earlier than in the immediately preceding year. — **86**
- How many days 19 solar years contain. — **86**
- That in 19 solar years there occur 235 lunations. — **86**
- How great the difference is between 19 solar years and 235 mean lunations. — **86**
- How great the anticipation of the Moon is in 19 years, and how great in 76. — **86**
- That the lunations anticipate by one day in 312½ years, and not in 304 years, as some maintain. — **87**
- That in 19 solar years are contained 235 civil lunations. — **87**
- How 235 civil lunations, contained in 19 years, fill out the time of just as many mean lunations, although in each one 44 minutes, 3 seconds, 11 thirds of one hour are omitted. — **87**
- From where, in 19 years, are supplied the 44 minutes, 3 seconds, 11 thirds that are omitted in each civil lunation, together with the 12 hours taken from the last, extraordinary lunation. — **87**

In Chapter IX [*In Capite IX*]

- The description of the golden numbers in the calendar. — **88**
- What order there is among the golden numbers in the calendar. — **88**

- How the following golden number is generated from the immediately preceding one, and vice versa. — **88**
- That in the calendar a lesser golden number mostly follows immediately upon a greater preceding one, but a greater does not immediately follow a lesser. — **88**
- By what method, from the first golden number of the calendar, or from the last, all the others are inscribed in the calendar. — **88**
- In which places a greater golden number immediately follows a lesser in the old calendar. — **88**
- In which places a greater golden number would immediately follow a lesser in the new calendar of the present time, if the golden numbers were to be written in it. — **89**
- The ecclesiastical calendar that the Church used from the Council of Nicaea down to the correction of the year made by Gregory XIII. — **90**
- That the first golden number of January is not formed by adding 8 to the last golden number of December. — **94**
- The ecclesiastical calendar that the Church would have to use after the correction of the year made by Gregory XIII, down to the year 1700, if golden numbers had been written in it instead of epacts. — **94**
- Why the following golden number is formed from the preceding by adding 8 or subtracting 11, but the preceding from the following by adding 11 or subtracting 8; and why the golden numbers are not written in continuous order in the calendar. — **99**
- How the new moons are investigated from the golden numbers arranged in the calendar. — **99**
- The deficiency of the golden number for investigating the new moons. — **99**
- By how much the new moons had anticipated from the time of the Council of Nicaea down to the year of correction. — **99**
- How the golden numbers in the old calendar would have had to be changed so that they might indicate the new moons both before the correction and after. — **99**
- That the golden numbers, once corrected in the calendar, cannot show the new moons perpetually or for long, and why. — **100**
- That if the golden number had to be kept in the calendar, 30 calendars would have to be drawn up. — **100**

- That the 30 epacts were rightly substituted in place of the golden numbers. — **100**
- Why every epact must be less than 30. — **100**
- What the epacts are, and why they are 30. — **100**
- Why they are called epacts. — **100**

In Chapter X [*In Capite X*]

- Why the epacts are arranged in the calendar in retrograde order. — **101**
- How the epacts are arranged in the calendar. — **101**
- That the epacts arranged in the calendar do not keep the order of the cycle. — **101**
- Why in six places of the calendar two epacts are assigned to the same day. — **101**
- That the lunations occur alternately of 30 and 29 days, because of the placing of two epacts on the same day in six places of the calendar. — **101**
- Why epact 25 (Arabic) must be written in a different type or colour above the other epact xxv (Roman) in six places of the calendar. — **101**
- That, because of epact 25 (Arabic) written in a different colour or type, two new moons cannot fall on the same day within the same decemnovennial cycle. — **101**
- Why in the same cycle epact xxiiij (Roman) is not used when epact xxv (Roman) and a golden number not greater than 11 concur; likewise why epact xxvi (Roman) is not in use in the same cycle when epact 25 (Arabic) and a golden number greater than 11 concur. — **102**
- That epact 25 (Arabic), of a different colour or type, placed opposite epact xxvi (Roman), does not disturb the lunations. — **102**
- Why the equation of the lunar months was made rather by epacts xxv and xxiiij (Roman) placed together than by others. — **102**
- Why not all the Paschal lunations in the new calendar are of 29 days, as in the old. — **103**
- Why the equation of the epacts proposed in the calendar of the Compendium was rejected, and another established in the new calendar. — **103**
- Why epact 19 (Arabic), in a different colour or type, is placed at the last day of December opposite epact xx (Roman) in the calendar. — **103**

- That, because of epact 19 (Arabic) placed at the last day of December opposite epact xx (Roman), two new moons cannot fall on the same day within the same decemnovennial cycle. — **104**
- How, from the epacts arranged in the calendar, the new moons are investigated according to the usage of the Church. — **104**
- By what method the epacts can indicate the new moons perpetually. — **104**
- That the epacts have rightly succeeded to the place of the golden numbers, and are arranged in retrograde order in the calendar. — **104**
- That the days of December remaining after the last lunation mostly show the epact of the following year. — **104**
- That the 30 epacts [Epactas 30, Arabic] can be arranged in direct order in the calendar. — **105**

This is a continuation of the *Index* (the chapter-by-chapter table of contents) of the *Explicatio Romani Calendarii*. Each entry is a topic-statement followed by the page reference on which it is treated. The block rubrics (IN CAPITE ...) are preserved verbatim; the numeral form of each page reference is transcribed as printed.

IN CAPITE XI. (*In Chapter 11*)

- From the 30 epacts only 19 are used, within one or more spans of a hundred years, to show the new moons. — 105
- When the 19 epacts are to be taken one unit greater than the preceding 19, and when smaller. — 105
- Construction of the table of expanded epacts. — 105
- Why letters of the alphabet, rather than years of the Lord, are assigned to the lines of epacts in the expanded table. — 106
- Construction of the table of the equation of the epacts. — 106
- That the new moons, by the practice of the Church, ought to be indicated by the Cycle after the celestial new moons. — 107
- That the new moons of the golden numbers, around the time of the Council of Nicaea [Concilium Nicænum], were nearly the same as those occurring in the sky. — 107
- That the new moons of the golden numbers, around the year of the Lord 550, occurred later than those in the sky, and were therefore better suited to the use of the Church. — 107
- Where the root of the equation of the epacts is to be fixed. — 107

- That the equation of the Moon is anticipated at every three-hundredth year by $12\frac{1}{2}$ years, of which account must nonetheless be kept until they make up a total of 100 years. — 107
- Continuation of the table of the equation through the hundredth-years up to the year 1582 of the correction. — 107
- How the equation of the epacts is set up in the year of the correction, 1582. — 108
- Which letter of the equation belongs to the year of the correction, 1582. — 108
- How the table of the equation of the epacts is set up after the correction, taking account of the equation of the solar year. — 108
- Which letter of the equation belongs to the year 1600. — 108
- Which letter of the equation belongs to the year 1700. — 108
- Which letter of the equation belongs to the year 1800. — 108
- Which letters of the equation belong to the years 1900, 2000, 2100. — 108
- Which letters of the equation belong to the years 2200, 2300[?]. — 109
- Which letters of the equation belong to the years 2400, 2500. — 109
- Which letters of the equation belong to the years 2600, 2700, 2800. — 109
- Continuation of the table of the equation of the epacts after the correction, through the hundredth-years to infinity, according to the mind of the author of the Calendar. — 109
- THE EXPANDED TABLE of epacts, together with the perpetual table of the equation of the epacts, following the opinion of Lilius [Lilj], and also with the days removed. — 110
- A threefold rule for continuing the table of the equation of the epacts to infinity, following the opinion of Lilius. — 131
- That by the table of the equation of chapter 11 the epact is not to be found beyond the year 8200. — 131
- That the letters of the equation of the epacts, after 10,000 years, proceed in the same proportion as before, and why. — 132
- That the whole labor of framing the table of the equation lies in the first span of 10,000 years. — 132
- That the table of the equation is contained within a cycle of 300,000 years, and why. — 133
- What is to be done in the equation of the Moon after 481,436 years. — 133

IN CAPITE XII. (*In Chapter 12*)

- What the cycle of the golden number is. — 133
- The golden number of any year begins in January. — 133
- Finding the golden number for any year from the new table. — 133
- Finding the golden number from another new table. — 133
- A far quicker finding of the golden number. — 139
- Finding the golden number from temporary tables. — 140
- Finding the golden number from another table extending to more years. — 141
- The use of the expanded table, and of the equation of the epacts, in finding the epact of any year. — 141
- By which table the epact is more correctly found after the year 8200. — 141
- The epact of any year begins in January. — 142
- Construction of the perpetual Cycle of epacts. — 142
- Finding the epact for any year from the perpetual Cycle of epacts. — 142
- An abridgement of the table of the equation of the epacts of chapter 11. — 144
- The use of the abridgement of the table of the equation of the epacts in finding the epact of any year. — 144
- Finding the letter of the expanded table, or of the perpetual Cycle of epacts, for investigating the epact of any year, by arithmetic. — 145
- Finding the number of days removed, from the year 1700 inclusive up to any hundredth year inclusive. — 145
- How the postposition of the Moon for any hundredth year is found. — 149
- That, in order to draw the postposition of the Moon for any hundredth year from the tables, one must enter the earlier table only once at the end, even if the year with which the entry is made is also found in the later table. — 149
- Why the author of the Calendar chose to set forth his equation, although it is fallacious in far-distant ages. — 150
- That it is not absolutely necessary for the table of the equation of the author of the Calendar to be corrected. — 150
- A more accurate finding of the letter of the expanded table in far-distant ages. — 153
- A more accurate finding of the same letter, from memory. — 153
- What to do when the postposition of the Moon, added to 9, is greater than 365. — 153

- An easy finding of the letter of the expanded table, when the 11 letters must be counted repeatedly. — 154
- A more accurate finding of the epact than was given at Number 3. — 154
- That the letter of the expanded table is sought in vain by the foregoing rules after 100,000 or 200,000 years. — 154
- A more accurate construction of the table of the equation of the epacts than in chapter 11. — 154
- That in the expanded table the descent is sometimes rightly made through two lines. — 155
- Why in chapter 11 the table of the equation for 300,000 years was set forth, though it is fallacious. — 155
- An easy finding of the letter of the expanded table, up to the year 310,000. — 155
- The ready construction of a certain table for seeking out the epact. — 157
- Finding the epact for any year from the aforesaid table. — 159
- Finding the epact of any year from temporary tables. — 159
- Construction of temporary tables for investigating the epacts. — 159
- How the epact of any year is formed from the epact of the preceding year. — 165
- Why 12 is added to the epact concurring with golden number 19, to make up the following year's epact. — 165
- Why, when golden number 19 is running, a unit must be added to the days that remain in December after the last lunation, so that the following year's epact may be established. — 165
- Why the following epact is not always formed from the preceding one by adding 11 or 12. — 166
- In what way the table of the equation of the epacts is to be restored, if perhaps another magnitude of the year is found by posterity. — 166
- In what way the table of the equation of the epacts is to be restored, if perhaps the Moon must be equated differently. — 166
- That the epacts do not change their places in the Calendar, even if the table of the equation must be renewed. — 166
- Why the cycle of the golden number, or any other that does not fill all the places of the Calendar, cannot be immutable in the Calendar. — 166
- Why the Gregorian Calendar is called perpetual. — 167

(Chapter 12 continued)

- In what sense the cycle of epacts of the new Calendar is said to be adaptable to any magnitude of the year. — 167
- That the new Calendar is not called perpetual on the supposition that, by our equation, the equinox cannot leave the 21st of March. — 167
- Why a twofold method of equating the solar year was set forth in the Compendium sent to the princes. — 167
- How easy the restoration of the equinox is, by the omission or intercalation of a few days. — 167
- Why it has always seemed difficult to inscribe in the Calendar a cycle that is perpetual. — 167
- Praise of the new Calendar. — 167
- How the table of the equation of the epacts is to be corrected in the most far-distant ages. — 167

IN CAPITE XIII. (*In Chapter 13*)

- That an easier method of computing the new and full moons is given in chapters 25 and 26. — 168
- What the epacts of the years and of the months are. — 168
- How the epacts of the years and of the months are gathered and reduced into tables. — 168
- Tables of the epacts of the years and of the months. — 169
- By what method the new and full moons are sought from the tables of epacts. — 171
- What to do when the new or full moon sought falls beyond the proposed month. — 172
- Why, in the reckoning of the lunations, all the days removed on account of the equation of the equinox must be added. — 172
- Table of the revolutions of the new moons. — 173
- Why, in the new moons found by computation, the anticipation of 1 hour 27 minutes 33 seconds is not perceived after 19 years. — 173
- A table for computing the new and full moons up to the year 1,000,000,000. — 174

IN CAPITE XIII. (*In Chapter 14*)

- Construction of the table of new moons for 76 primary years, from the year 1501 inclusive up to the year 1576 inclusive. — 174

- Construction of the table of orders, and of the time that must be added to or subtracted from the new moons in each order. — 174
- How the series of years to the right of the table of new moons proceeds. — 175
- Table of the anticipation of the Moon in years progressing by 67, which contains the orders and the time that must be added to or subtracted from the new moons in each order. — 176
- Table of new moons for 76 primary years, from the year 1501 inclusive up to the year 1576 inclusive, which make up one Callippic period [periodus Callippi]. — 177
- Finding the new moon in any month of a given primary year, together with the full moon, from the aforesaid table. — 253
- Finding the new and full moon in any month of a given year after 1576, up to the Gregorian correction, from the same table. — 253
- Finding the new and full moon after the correction of the year, from the same table. — 253
- What to do when the new moon found falls beyond the proposed month. — 253
- How the new moons are found in the common hundredth-years. — 253
- What to do when the time of some order cannot be subtracted from the new moon of a month of a primary year. — 254

IN CAPITE XV. (*In Chapter 15*)

- By what method the golden numbers are extracted from the epacts, so that they may be inscribed in the Calendar serving a given century. — 254
- Explanation of the thirty Calendars with golden numbers, together with a table of the aforesaid 30 Calendars. — 254
- How the new moons are investigated by the golden numbers of the 30 Calendars. — 304
- The disadvantage of the 30 Calendars. — 304

IN CAPITE XVI. (*In Chapter 16*)

- Explanation of the 30 tables comprising all the lunations of the thirty Cycles of the expanded table, together with the tables themselves. — 304
- When the lunar year, both common and embolismic, becomes hollow, namely of 353 or 383 days. — 335

IN CAPITE XVII. (*In Chapter 17*)

- That a lunation is assigned to the month in which it ends, and why. — 335
- That every Cycle of epacts begins either from *, if it is contained in the proposed Cycle, or from 1, if * is not found in the given Cycle. — 335
- Which nineteen-year Cycles begin from *, and which from epact 1. — 335
- That any nineteen-year Cycle of epacts begins either from the first day of January or from the last day of December. — 336
- That the cycle of the golden number, before the correction, after the Council of Nicaea, always began from golden number 3 and from the first day of January. — 336
- That the nineteen-year cycle of the golden number begins either from the golden number written at the Kalends of January, or from that which would have to be ascribed to the last day of December, if the solar year began from there. — 336
- That the beginning of the cycle of the golden number is taken successively from all the golden numbers, if the equation of the solar and of the lunar year is applied. — 337
- Why every nineteen-year Cycle of epacts always begins from * or from epact 1. — 337
- That the cycle of the golden number among the Alexandrians always began from the last day of their year, and from golden number 1. — 337
- What an embolism is. — 337
- By what method 13 lunations can be contained in one year. — 337
- That in every nineteen-year Cycle there are 7 embolismic years; whence this is known, and which they are. — 337
- Why in every nineteen-year Cycle the years 3, 6, 9, 11, 14, 17, and 19 are embolismic. — 337
- Why in a nineteen-year Cycle one of the 7 extraordinary lunations necessarily contains only 29 days. — 337
- When an embolismic year becomes one of 384 days, and when of 383 days. — 337
- That only two nineteen-year Cycles out of all 30 of the expanded table have a seventh embolismic lunation of 29 days. — 338
- That the first lunation of an embolismic year ends on one of the first 11 days of January; and why. — 338
- That eleven epacts are always embolismic — that is, that the year is embolismic in which one of them runs with any golden number — and which they are. — 338

- That the 12th lunation in an embolismic year ends on one of the last 11 days of December; and why. — 338

(Chapter 17 continued)

- That the first lunation of the year following an embolism always begins from some embolismic epact, except in the embolism in which epact xix does not run with golden number 19; and why. — 338
- That the 11 enumerated epacts are, all and only, always embolismic; and that the 7 enumerated years in every nineteen-year Cycle are, all and only, embolismic; how this is known from the expanded table and from the 30 tables of lunations. — 338
- That the year in which epact xviii and golden number 19 concur is also embolismic; and why. — 338
- That the year in which epact xviii and golden number 19 concur is also embolismic; and why. — 339
- That the year in which epact xviii does not concur with golden number 19 is not embolismic; and why. — 339
- Which seven golden numbers were embolismic in the old Calendar. — 339
- That the cycle of the golden number in the old Calendar necessarily took its beginning from 3. — 339
- Why the cycle of the golden number in the old Calendar could have its beginning from no other number than 3. — 339
- Which of the 13 lunations of an embolismic year is to be called embolismic. — 339
- Which of the 13 lunations of an embolismic year is to be called embolismic. — 339
- Which embolismic epacts have a 13th lunation of 30 days and embolismic. — 339
- When the embolismic epacts, whose 13th lunation is of 30 days, have a first lunation of the year of 29 days. — 339
- That epacts xviii and xix, concurring with golden number 19, have a 13th lunation that is embolismic and of 29 days. — 340
- Which embolismic epacts have a first lunation of the year that is embolismic and of 29 days. — 340
- When the same embolismic epacts, of which we have just spoken, have a second lunation that is embolismic and of 30 days. — 340

- What the leap of the Moon [saltus Lunæ] is, among the computists, in common lunar years. — 340
- When, in an embolismic year, the leap of the Moon can be said to occur. — 340
- Which embolismic years contain only 383 days, and which common lunar years only 353. — 341
- That the leap of the Moon always occurs when the golden number is 1, otherwise never, except in the embolismic years of epacts xix, xviii. — 341
- Why the leap of the Moon is displeasing to most. — 341
- That, on account of the embolisms and the leap of the Moon, it sometimes happens that two or three consecutive lunations are of 29 days, and two, three, or four of 30 days. — 341
- That it is neither new nor absurd for two or more consecutive lunations to be sometimes of 29 or of 30 days. — 341
- Table of the lunations of the golden numbers set down in the old Calendar. — 342
- Why the epacts in the expanded table do not exhibit, for the time of the Council of Nicaea, the golden numbers as they are arranged in the old Calendar. — 343
- The 12 places in which the golden numbers of the new Calendar differ from the golden numbers of the old Calendar. — 343
- The excellence of the new Calendar with its epacts. — 344
- How the embolismic epacts are known from the perpetual table of new moons. — 344
- Perpetual table of the new moons of the whole year. — 344

IN CAPITE XVIII. (*In Chapter 18*)

- The false opinion of some, that Easter [Pascha] is not to be celebrated on the 15th moon but afterward. — 346
- How it was forbidden that the Christian Easter [Pascha Christianum] be celebrated together with the Jews. — 346
- That Easter has frequently been celebrated in the Church on the 15th moon. — 346

(*Chapter 18 continued*)

- The false opinion of some concerning the 14th Paschal moon [Luna xiiii. Paschalis]. — 346

- Another false opinion concerning the 14th Paschal moon. — 346
- What the 14th Paschal moon is, according to the practice of the Church. — 346
- That tables of the mean motion of the Moon are useful for examining any proposed Cycle. — 347
- Which Cycle, out of all, is to be chosen. — 3[?]4
- That the cycle of epacts is so arranged that the 14th Paschal moons do not precede the mean oppositions by more than one day; and why. — 347
- That if the new moon of the Cycle did not follow the conjunction that occurs in the sky, Easter would often be celebrated before the full moon. — 347
- Why the epacts in the Calendar were not moved up by one day, so that they might indicate the new moons sooner than they now do. — 347
- That in the table of the equation the capital letter D is rightly set against the year 1582 after the correction, but not the capital letter E. — 350
- That Easter, around the time of the Council of Nicaea, frequently fell as it were on the 14th moon, because the new moons were shown too early. — 350
- Why, in the celebration of Easter even after the Council of Nicaea, so many disagreements arose between the Eastern and the Western Church. — 350
- That many errors would occur in Easter if the epacts indicated the new moons sooner than they do by the prescription of the new Calendar, especially in the year 1598. — 351
- That it is not rightly affirmed by some that the Easter of the year 1598 ought to have been thrown back from the 22nd of March to the 29th. — 351
- That new moons set too late cause Easter sometimes to be celebrated in the last month. — 351
- That the arrangement of the epacts in the Calendar cannot rightly be censured. — 351
- That in the new Calendar Easter is rarely celebrated before the mean opposition — or nearly so — such that in some manner it does not fall short of it. — 351
- That a Cycle, whatever it be, cannot avoid all inconveniences. — 352
- That the epacts of the new Calendar hold a middle course in the anticipation and postposition of the new moons. — 352
- That the epacts could not be better placed than has been done in the new Calendar. — 352

- That when the 14th moon anticipates the mean opposition more than is right, the error is often corrected by the Dominical letter. — 352
- Why a Cycle, whatever it be, cannot correspond exactly to the celestial motions. — 352
- Why the lunations in a leap year, after the intercalary day, are slower than is fitting. — 352
- When the Moon, according to Bede [Beda], is to be called the first. — 352
- When the Moon, according to Campanus [Campanus], is to be called the first. — 352
- What the 14th moon is, in Theophilus [Theophilus] and St. Cyril [S. Cyrillus]. — 353
- That the epacts of the new Calendar rightly indicate the new moons after the mean conjunctions. — 353
- That in the civil solar year [annus Politicus Solaris] that day is sometimes called the first which would more truly be the last. — 353
- That that day is sometimes called the last of some month which would more truly be called the first of the following month. — 353

IN CAPITE XIX. (*In Chapter 19*)

- 1. An argument against the epacts, and its solution. — 353
- That the Cycle of epacts shows in the Calendar how many days have generally elapsed after the true conjunction. — 353
- 2. An argument against the epacts, and its solution. — 390 & 391
- The Paschal new moon of the 5th of April ceases to be Paschal when the passage is made from the upper line of the expanded table to the lower [line]... —

These leaves conclude the subject index arranged by chapter (its entries grouped under "In Chapter ..." rubrics) and then open the *Alphabetical Index*. Each entry is given in English with its page reference transcribed verbatim; "ibid." (in the same place) is preserved as printed, and the doubled epact-numeral forms (xiiij, xv, xxv) are kept as set in the source.

Subject Index, arranged by chapter (continued)

(*Continuation of the entries for Chapter XIX*)

- ...the lower one; and the non-Paschal new moon of 7 March begins to be Paschal. 354
- The Paschal new moon of 8 March ceases to be Paschal, when the passage is made from the lower line of the expanded table to the upper, and the non-Paschal new moon of 6 April begins to be Paschal. *ibid.*
- No cycle, whatever it be and by whatever method it is set out in the calendar, can avoid sometimes displaying the xv Moon in the second month, or in the last — which it nonetheless calls Paschal. 356
- Very often no Easter could be celebrated in a given year, if the mean motions were observed by the Church, and not the cycles. *ibid.*
- What the Church does when in some year there is no Paschal full moon. *ibid.*
- In what month the Church celebrates Easter, when in some year there is no Paschal full moon. 357
- The same golden number sometimes throws Easter back from March into April, and the reverse. *ibid.*
- The same golden number, from one centennial year to the next following, in certain years shows the xiiij Moon now before the mean opposition, now after it. *ibid.*
- How it is clearly demonstrated, from what has just been said, that the epacts are rightly placed and equated in the calendar. 358
- Some epacts, in years of the same century, show their xiiij [Moons] before the mean oppositions, others after them. *ibid.*
- In the times of the Emperor Justinian the same golden number in the old calendar showed the xiiij Moon now earlier, now later; likewise some anticipated their xiiij [Moons], while others postponed them. 359
- In certain years no mean Paschal full moon is found in the old calendar. *ibid.*
- Four errors that can be avoided in no calendar; and what they are. 360

In Chapter XX

- What the solar cycle is. 361
- The cycle of dominical letters is the same as the solar cycle. *ibid.*
- The finding of the solar cycle from tables, in three ways. *ibid.*
- Temporary tables of the solar cycle. 364

In Chapter XXI

- Whence the 28-year cycle of dominical letters arises. 365

- The finding of the dominical letter by the solar cycle, from a table. 366
- Temporary tables of the dominical letters. 369
- An easier finding of the dominical letter, without the solar cycle, from a table. 369
- The dominical letters found for the first 4 years of Christ by the calendar's prescription differ from those which were then actually in use. 372
- The 400-year cycle of dominical letters after the correction. *ibid.*
- The finding of the dominical letter from the 400-year cycle. *ibid.*
- By what method one may learn what place any given year holds in the 400-year cycle. 375

In Chapter XXII

- What the movable feasts are. 375
- How the key to the resolved table of movable feasts for 70 years is constructed. 376
- The finding of the movable feasts from the resolved 70-year table. 376
- The temporary table of movable feasts, from the year 1600 up to the year 5000. 380
- The preceding table of movable feasts shows that the epacts correctly indicate the *xiii*j Moons. 502
- In what years the *xiii*j Moons appear to run ahead of the mean oppositions more than is proper. *ibid.*
- That the full moon falling on Easter day before sunset is not contrary to the canon of the Council of Nicaea. *ibid.*
- The same epact shows the *xiii*j Moon now anticipated, now postponed, and now at last in accord with the canons. *ibid.*
- The same error in the *xiii*j Moons is found in the ancient golden-number cycle promoted to a higher place, which is detected in the cycle of epacts. 503
- The same error that has been noted in the epacts is detected in the golden number at the time of the Council of Nicaea. 503

In Chapter XXIII

- Easter is to be celebrated on one and the same day in all parts of the world. 505

In Chapter XXIII

- The title of Viète's calendar. 505

- Viète devises a new arrangement of the epacts and a new beginning of the year. 506
- The Gregorian calendar according to Viète's opinion. 506
- Viète's bold deed in printing his own calendar separately, together with Gregory's bull. 510
- That the year should begin from 8 March, as Viète wishes, is not necessary. 510
- Viète breaks the common rule for finding the age of the Moon by the epacts. *ibid.*
- Viète's epacts are truly not epacts. 510
- Viète's epacts are not equal to the days that remain over in December after the last lunation. 512
- Several lunar months in Viète contain only 28 days. *ibid.*
- Several lunar months are set by Viète at only 27 days. *ibid.*
- From the first lunation of the year, on account of the equation of the Moon, one day is taken away or added. 512
- For what reason Viète so often makes the lunar month one of 28 days, and sometimes of only 27 days. *ibid.*
- Why it is not absurd that one lunation in bissextile years should contain 31 days. *ibid.*
- That Viète, willy-nilly, sometimes makes a lunation of 31 days. *ibid.*
- The equinox is better kept in its place if the intercalation is made at the beginning of the fourth year than if at the end. 513
- That Viète sometimes either sets two new moons next to each other with no day intervening, or has no Paschal new moon at all, and assigns 31 days to a single lunation. *ibid.*

(Continuation of the entries for Chapter XXVIII)

- That Viète sometimes even makes a lunation of only two days, or of 32. 514
- That Viète does not always add 11, so that the following epact may be formed — even when the golden number is not 19 and no other letter of the equation is to be taken — against the doctrine of all computists. *ibid.*
- That Viète rashly deprives six days of the year of a new moon. *ibid.*
- That the Paschal months should be full, as Viète wishes, is not necessary. *ibid.*
- Viète's κριτικὰ[?] [critical objections] against the Gregorian calendar, and their solutions. *ibid.*

- What the author of the calendar and its correctors had before their eyes in the equation of the epacts. 518
- That some epacts, in any cycle whatever, do not exhibit congruous xiiij Moons. *ibid.*
- Why the placing of the epacts, and their equation in the Gregor[ian] calendar, cannot rightly be censured. *ibid.*
- That Gregory XIII's intention in correcting the calendar was not the one Viète imagines for himself. 519
- The right ordering of the cycle in the calendar, in what it consists. *ibid.*
- That Viète proposes two tables of the equation of the epacts contrary to one another. *ibid.*
- That Viète, according to the earlier table of the equation, exhibits 125 Easters before the mean full moon. 521
- That Viète, according to the same earlier table of the equation, not rarely celebrates Easter in the second month. 524
- Viète's rule for finding the epact in any given year. 524
- That Viète, according to the later table of the equation, more often celebrates Easter in the last month. 525
- That Viète very often exhibits xv Moons before the legitimate time. 527
- That Viète postpones not a few xiiij Moons more than is proper. 528
- That the Moon's great period of 3400 years does not accurately restore the synodic months, as Viète thinks. *ibid.*
- The progression of the new moons from century to century, according to Viète's opinion. 529
- The truer progression of the new moons from century to century after the correction, how great it is. *ibid.*
- The progression of the new moons from century to century before the correction, how great it is. *ibid.*

In Chapter XXV

- How the epacts corrected for computing the new moons after the correction are gathered. 530
- By what method the Paschal new moon of any centennial year after the correction is computed by the corrected epacts. 533
- When the Paschal full moon falls in March, or in April. *ibid.*

- By what method the Paschal new moon or full moon of any expanded year is elicited from the new moon or full moon of the centennial year immediately preceding it. 533
- By what method the new moon or full moon of any month is drawn from the new moon or full moon of March or April. 535
- A compendium for computing the Paschal full moons of the 100 expanded years. 536

In Chapter XXVI

- The progressions of the new moons and of the full moons, by what method they are gathered. 537
- By what method the Paschal new moon and full moon is computed by the progressions of the new moons. 539

In Chapter XXVII

- In what matters the Gregorian calendar is censured by very many. 540
- Who they are that have published a calendar of their own different from the Gregorian. *ibid.*
- That Scaliger took the calendar of the *Compendium* for his own. *ibid.*
- What errors Scaliger committed in his own calendar. *ibid.*
- By what method Scaliger investigates the epact of any given year. 542
- That the little table of Jewish new moons proposed by Scaliger does not sufficiently agree with the perpetual cycle of epacts. *ibid.*
- That Scaliger, in the changing of the epacts, did not always take account of the postponements of the Moon and of the days removed. 544
- That Scaliger's *xiiiij* Moons very often occur two days, or three, or even four before the Gregorian *xiiiij* Moons. 546. 548
- That Scaliger not rarely offers Easter to be celebrated one day, or even two, before the full moon. *ibid.*
- That Scaliger frequently celebrates Easter in the last month of the preceding year. *ibid.*
- That some of Scaliger's *xiiiij* Moons are postponed too much. 549
- What is to be gathered from the things that have been said against Scaliger and Viète. 551

In Chapter XXVIII

- The calculus of lunations, extended by tables as far as the Fourths [fourth differences]. 552

Alphabetical Index

ALPHABETICAL INDEX.

A

- The finding of [the Sunday of] the Lord's Advent by memory. 579
- An equation established for the mean year cannot rightly be censured. 81
- An equation of the equinox, if it were established according to the true motion, would stir up great confusion among Christians. 79
- Why the equation of the epacts proposed in the calendar of the *Compendium* was rejected, and another established in the new calendar. 103
- By what method the equation of the epacts is to be established, according to the opinion of Nicolaus Copernicus, following the varying magnitude of the *animi* [recte: *anni*, "of the year"]. 11
- How the equation of the epacts was established by Aloysius Lilius according to the Alphonsine year. 9
- The equation applied in the centennial years keeps the equinox on the same day, in the same manner in which it is kept by the intercalation of every fourth year. 75
- The equation applied in the centennial years keeps the equinox on the same day more correctly than if it were done in any 134th year. 75
- The equation applied in the centennial years is very similar to the equation of the Arabs in the lunar year. 75
- What the equation of the Moon requires after 481436 years. 133
- The equation of the Moon, [made] every three-hundredth year, is forestalled by 12½ years, of which account must nevertheless be taken when they complete a sum of 100 years. 107
- Why the equation of the lunar months was made rather by the epacts xxv and xxiiij placed together, than by others. 102
- How the equation of the new calendar, had it begun from the Council of Nicaea, would present 10 days to be removed up to the year 1600. 84
- How the equation of the new calendar, carried back to the time of the Council of Nicaea, shows 10 days to be removed. 84
- How the table of the equation of the epacts is constructed. 106
- How the table of the equation of the epacts is to be corrected in the most widely distant centuries. 167

- The use of the equation of the epacts, established according to Aloysius Lilius. 10
- By what method the table of the equation of the epacts is to be restored, if perhaps another magnitude of the year should be discovered by posterity, or the Moon should have to be equated otherwise than has been declared. 166
- How it is to be understood that the equation of the new calendar agrees with the mean equinox. 84
- That the equation of the new calendar corresponds exactly to several past and future years, though not to all — which is enough. *ibid.*
- A uniform equation is attacked by some in vain. 79
- Where the root [epoch] of the equation of the epacts is to be set. 107
- That any equation whatever, except the one established according to the Alphonsine year, disturbs the equinox from its proper seat further than it should. 81
- How easy the restoration of the equinox is, by the omission or intercalation of some days. 167
- The seat of the equinox was fixed on 21 March by the Council of Nicaea. 3
- The recession of the equinox from the 21st [of March] has place only in the Prutenic tables. 83
- That the restoration of the equinox to 21 March, by the omission of the intercalary day in the year 1700, is not the discharging of one debt by another [*versura*], as someone slanderously alleges. 82
- Many Supreme Pontiffs attempted to correct the error of the equinox and of the *xiiij* Moon. 3
- The emendation of the equinox, if it were established according to the true motion, would generate great confusion among Christians. 79
- The 21st of March was assigned to the vernal equinox by the Council of Nicaea. 62
- By what method a fixed seat is established for the equinox by Aloysius Lilius. 3
- When the period of the anomaly of the equinoxes began before the birth of Christ, according to the doctrine of Nicolaus Copernicus. 76
- In what year of Christ the period of the anomaly of the equinoxes will begin again. 76
- By what method of intercalation the equinox is kept near 21 March. 69

- The equinox is twofold: astronomical, or true, and ecclesiastical, or political. 73
- When the true and the mean equinox occur together, and when their difference is moderate. 76
- When the equinox slips from the 21st to the 22nd and 23rd, and when it returns to the 21st; likewise when it recedes from the 21st to the 20th and 19th, and when it goes back thence to the 21st. 82
- In how many years the equinox would slip forward by one day from 21 March toward the end of the month, if the Alphonsine year always held the mean place between the greatest and the least year. 74
- Aloysius Lilius alone assigned a fixed seat to the equinox in the calendar, and at the same time set out in it a perpetual cycle of the Moon.
[reference: ?]
- The equinox had deserted its seat. 3
- The equinox, according to the equation of the new calendar, cannot recede far from 21 March, and therefore it was rightly established for the Alphonsine year, which is the mean. 79
- The equinox cannot remain on the same day, on account of the six hours omitted each year. 73
- That the equinox has been correctly restored to 21 March by the removal of 10 days is confirmed by the observations of a certain more recent mathematician. 69
- That the equinox is disturbed from its proper seat further than it should be by any equation except the one established for the Alphonsine year. 81
- The equinox and the new moons, at the time when the calendar was being corrected by Gregory XIII, did not fall on the same days as they did at the time of the Council of Nicaea. 63
- That the equinox, on account of the inequality of the year, recedes to either side of 21 March. 82
- The equinox is more correctly kept on 21 March by the equation applied in the centennial years than if it were done every 134th year. 74
- According to what opinion the equinox was restored by Gregory XIII. 65
- The mean equinox does not occur when the line of the Sun's mean motion is joined with the point of the mean equinox. 80
- The equinox must necessarily be restored by the removal of 10 days...

These leaves continue the *Alphabetical Index*. Each entry is given in English with its page reference transcribed verbatim from the source; the doubled Moon- and

epact-numeral forms (xiiij, xv, XIII, xxv) and the epact-30 asterisk * are preserved exactly as set, and Arabic year- and quantity-numbers are kept as printed. The run continues the letter **A**, then passes to **B** and **C**.

A (continued)

- ... — whether the equinox had to be reclaimed by shifting from the 11th onto the 21st; that is, whether the equation supplies 10 days to be removed, reckoning back to the Council of Nicaea, or not. 84
- Whether, if after some years the equinox had wholly deserted 21 March, it could by any means be brought back to the same day. 73
- The restoration of the equinox has been proposed variously by various people. 64
- Why most people judged it impossible that a fixed seat could be assigned to the equinox in the calendar, and a perpetual lunar cycle laid out. 1
- That it is difficult to ascribe a fixed seat to the equinox, on account of the uncertain and variable magnitude of the tropical year. 3
- That the equinox is kept on the same day by the equation applied in the centennial years, in the same way as it is kept on the same day by intercalation every fourth year. 75
- When the mean equinox occurs. 79
- That, if all the years were common, the equinox would run through all the days of the year in 1460 years. 70
- Why the equinox anticipates its seat in the calendar. 74
- That the equinox is better kept in its seat if the intercalation is made at the beginning of the fourth year than if it is made at its end. 513
- By what reasoning the vernal equinox was brought back to 21 March. 65
- That the equinox, even though it does not always fall on 21 March, does not thereby harm the feast of Easter. 63
- That the vernal equinox would slip forward to 27 March, as a certain astronomer supposed. 80

- In how many years the equinox anticipates by one day, according to the Alphonsine year. 65
- When the mean equinox precedes, or follows, the true. 79
- By what method the equinox is to be kept so that it does not anticipate. 70
- Why, under the equation of the new calendar, the equinox more frequently falls in the heavens after 21 March than before that same 21st. 80
- That the mean equinox can be as much as a full four days distant from the true — which some have falsely supposed, and why. 79
- What disadvantages the restoration of the equinox according to others would have entailed. 65
- The finding of the age of the Moon by memory. 567
- How many years the year of al-Battānī [Albategnius] requires for one intercalary day to be omitted. 71
- How great the year is according to al-Battānī. 70
- That the care of the golden-number cycle was entrusted by the Council of Nicaea to the Alexandrians and to Eusebius of Caesarea. 56
- The calendar of Aloysius Lilius with the cycle of epacts. 5
- Aloysius Lilius perfected a thoroughly complete table of the movable feasts. 11
- Aloysius Lilius, whom Gregory XIII followed, alone laid out a perpetual lunar cycle in the calendar, and at the same time assigned a fixed seat to the equinox. 1
- What remedy Aloysius Lilius devised for fixing a stable seat to the equinox. 3
- The expanded table of epacts of Aloysius Lilius, with the little table for the equation of those same epacts. 9 & 10
- By what method Aloysius Lilius established the equation of the epacts according to the Alphonsine year. 9

- Aloysius Lilius, the first author of the new Gregorian calendar. [in the Letter to the Reader]
- The magnitude of the Alphonsine year. 70
- How great the Alphonsine year is. 65
- How many years the Alphonsine year requires for one intercalary day to be omitted. 71
- Ambrose's opinion on the celebration of Easter, from the decree of the Council of Nicaea. 56
- Why both the solar and the lunar year had to be corrected. 1
- Why the Alphonsine year — that is, the mean year — is the only one suitable for equating the solar year. 71
- The magnitude of the year according to the Alphonsines. 65
- The magnitude of the year according to Julius Caesar and the Church. 65
- The magnitude of the year from Ptolemy. 70
- What the civil lunar year is, of how many kinds, and how great. 85
- What the astronomical lunar year is, and how great, both common and embolismic. 86
- What the lunar year is — both common and embolismic, full and hollow. 85
- By how much the Roman, or ecclesiastical, year is greater than the Alphonsine year. 65
- How many days 19 solar years contain. 86
- Which centennial years will hereafter remain bissextile, and which not, but will become common. 74
- Why the year is proposed to be equated through the centennial years. 74
- When the tropical year is greatest, when least, and when moderate. 76
- When the year has been greatest, when least, and when it has held the mean state. 65

- The Metonic 19-year year. 86
- When the lunar year — both common and embolismic — becomes hollow, namely of 353 or 383 days. 335
- How great the year of Julius Caesar and of the Church is. 65
- That it is not necessary for the year to begin from 8 March, as Viète wishes. 510
- How many years the Alphonsine year requires for the intercalary day to be omitted. 71
- Why the centennial years were chosen for equating the year. 74
- Why the mean year — that is, the Alphonsine — is the only one suitable for equating the solar year. 71
- By what method it is known what place any given year holds in the 400-year cycle. 375
- The magnitude of the year from al-Battānī. 70
- The magnitude of the year according to the Alphonsines. 70
- That the uncertain and variable magnitude of the tropical year makes it difficult to ascribe a fixed seat to the equinox. 3
- Why the greatest year is not suitable for equating the solar year. 71
- How many years the year of Ptolemy requires for the intercalary day to be omitted. 71
- That the astronomical year does not always begin from the same moment of the same day. 70
- That the year 1582 is to be called the year of the correction, because in it the correction of the calendar was carried out by Gregory XIII. 65
- What the astronomical year is. 69
- What the civil year is. 70
- That knowledge of the astronomical year is necessary in order that the civil year may be equated to it. 74

- How many years the year of al-Battānī requires for the intercalary day to be omitted. 71
- That an unequal year is not suitable for establishing the method of intercalation. 71
- Why every fourth year is bissextile. 70
- Why the mean magnitude of the year was assumed in the correction of the calendar. 71
- Why the least year is not suitable for equating the solar year. 71
- That the solar year is not always of the same magnitude. 70
- The radix of the period of the anomaly of the equinoxes. 76
- In what year of Christ the period of the anomaly of the equinoxes will begin again. 76
- When the period of the anomaly of the equinoxes began before the birth of Christ, according to the doctrine of Nicolaus Copernicus. 76
- Why the anticipation of 1 hour, 27 minutes, 33 seconds in 19 years is not detected in the new moons found by computation. 173
- In how many years the anticipation of the lunations amounts to one day. 87
- The source of the anticipation of the equinox in the calendar. 65
- The anticipation of the Moon in 19 years, and how great it is over 76. 8
- The Council of Antioch, that of Chalcedon, and others confirm the decree of the Council of Nicaea concerning the celebration of Easter. 55
- That it is an apostolic tradition to celebrate Easter on the Sunday after the Moon of the first month. 56
- That in the time of the Apostles Easter was celebrated on the Sunday after the XIII Moon of the first month, and that it is an apostolic tradition that it be so celebrated. 56
- Several arguments against the epacts, and their solution. 353
- Two arguments against the new calendar, with their solution. 81

- That knowledge of the astronomical year is necessary in order that the civil year may be equated to it. 70
- That some astronomers, for the motion of the Sun and Moon, trust the Alphonsine Tables more than the Prutenic. 67
- What the astronomical lunar year is, and how great, both common and embolismic. 86
- That the astronomical tables are to be greatly valued, even though they cannot last for a long time. 67
- The source of the inconstancy of the astronomical tables. 67
- How great the astronomical lunar month is, according to the mean motion. 86
- That the inconstancy of the astronomical tables is no obstacle to the perfection and perpetuity of the calendar. 81
- What the astronomical year is. 69
- That the astronomical year does not always begin from the same moment of the same day. 70
- Why upon the author of this book, above others, the burden of writing it was laid. [in the Letter to the Reader]
- What order the author of this book follows. 2
- What the author of this book has taken chiefly from the calendar of Aloysius Lilius. [in the Letter to the Reader]
- Why the author of this book differs in most matters from Aloysius Lilius. [in the Letter to the Reader]
- The first author of the new Gregorian calendar: Aloysius Lilius.
- The finding of the golden number by arithmetic. 18
- The finding of the golden number in the ecclesiastical computus, from its own little table. 508
- The finding of the golden number in the published calendar, by a table. 17
- The setting-out of the golden numbers in the calendar. 141

- That the golden numbers in the new calendar differ, in 12 places, from the golden numbers in the old. 343
- By what method the following golden number is generated from the immediately preceding one in the calendar, and vice versa. 88
- That the golden number, if it had to be retained in the calendar, would have to be arranged variously in 30 calendars. 100
- That the golden number, before the correction, falsely indicated the *xiiiij* Moon. 3
- That the same golden number, from one centennial year to the next following, in certain years exhibits the *xiiiij* Moon now before the mean opposition, now after it. 357
- That the lesser golden number in the calendar generally follows the greater preceding one immediately, but the greater does not follow the lesser immediately. 88
- What the cycle of the golden number is. 133
- That the golden numbers, once corrected in the calendar, cannot indicate the new moons perpetually or for long, and why. 100
- That the first golden number of January is not formed by adding 8 to the last golden number of December. 94
- The finding of the golden number on the fingers, by memory. 562
- That the same golden number sometimes throws Easter back from March into April, and vice versa. 357
- That the ancient golden numbers, if 300 years after the Council they be moved up into the higher place, as is fitting, contain the same error in the *xiiiij* Moons that is detected in the epacts. 502
- That the golden numbers, at the time of the Council of Nicaea, contain the same error in the *xiiiij* Moons which is noted in the epacts. 503
- Into what order the golden numbers are to be kept in the calendar. 88
- In what places the greater golden number is followed most closely by the lesser, in the old calendar. 88

- By what reasoning all the golden numbers are inscribed in the calendar from the first golden number of the calendar, or from the last. 88
- That the same golden number, in the old calendar, in the time of the Emperor Justinian, showed the *xiiij* Moon now earlier, now later; likewise that some anticipated their *xiiij* Moons, while others put them off. 359
- By what reasoning the golden numbers are drawn out from the epacts, so as to be inscribed in the calendar serving any given century. 254
- That there were seven embolismic golden numbers in the old calendar, and which they are. 339
- That the golden number of any year begins in January. 133
- Why the golden number cannot perpetually indicate the *xiiij* Paschal Moon in the calendar. 4
- By what method the golden numbers ought to have been changed in the old calendar, so that they might indicate the new moons both before the correction and after. 99
- The defect of the golden numbers for indicating the new moons and the *xiiij* Moons for Easter. 99
- When the golden number in course is 19, why a unit must be added to the days that remain in December after the last lunation of the year, so that the epact of the following year may be formed. 165
- In what places the greater golden number is followed most closely by the lesser, in the new calendar of this century, if the golden numbers were to be set out in it. 89
- The finding of the golden number for any year from various tables. 133
- Why the following golden number in the calendar is formed from the preceding by adding 8 or subtracting 11, and the preceding from the following by adding 11 or subtracting 8; and why the golden numbers are not written in continuous order in the calendar. 99

B

- Bede's opinion, that the Council of Nicaea renewed the ecclesiastical decree on celebrating Easter after the *xiiij* Moon of the first month. 56

- By what reasoning the bissextile years, both centennial and expanded, are distinguished from the non-bissextile. 575
- Why every fourth year is bissextile. 70
- The Bull of Gregory XIII on the corrected calendar. 13

C

- The decree of the Council of Caesarea in Palestine on celebrating Easter after the *xiii*j Moon of the first month. 55
- The calculation of the mean new moons and full moons. 168
- The calculation of the lunations, as far as the fourth [order]. 552
- In what respects the Gregorian calendar is criticized by most people. 540
- That Scaliger and Viète published a calendar of their own, different from the Gregorian. 540
- Praise of the new calendar. 167
- The thirty calendars of the golden numbers. 254
- That the new calendar is not called perpetual in the sense Lilius supposes — that the equinox, by the prescribed equation, cannot leave 21 March — which is attested by the twofold method of equating the solar year in the *Compendium* sent to the Princes. 167
- The disadvantage of the thirty calendars. 304
- What a calendar requires in order to be complete and durable. 85
- In what sense the equation of the new calendar is said to agree with the mean equinox. 84
- The old ecclesiastical calendar, which the Church used from the Council of Nicaea down to the correction of the year carried out by Gregory XIII. 90
- That the calendar has been restored with the help of the Prutenic Tables. 81
- In what the perpetuity and perfection of the Gregorian calendar consist. 73
- By what method the equation of the new calendar, traced back to the time of the Council of Nicaea, shows that 10 days are to be removed. 84

- That the new calendar is perfect, even though the Prutenic Tables should still agree with the true motions after 20000 years. 80
- That the new calendar — that is, the Gregorian — is not called perpetual as though the equinox could never recede from 21 March, but for another reason. 73
- Why the calendar necessarily had to be corrected. 64
- That the calendar could not be constructed in any other way than that in which Gregory constructed it, so as to be perfect, perpetual, or durable. 85
- Why the correction of the calendar was undertaken in the year 1582, and in October rather than in any other year and month. 65
- Why the correction of the calendar in the year 1583, in more remote regions, was ordered to be made in February rather than in another month. 66
- That the correction of the calendar consists in three things, and what they are. 64
- That, if the new calendar had been corrected in February 1582, it would have exhibited Easter more correctly than the old. 66
- By whom chiefly the errors of the Nicene ecclesiastical calendar were detected, and who wrote on their emendation. 1
- The Gregorian calendar, with the epacts distributed through the days of the months. 36
- Why no one before Gregory XIII attained the perfect correction of the calendar. 1
- The Gregorian calendar for the correction year 1582, comprising the last three months of the year. 49
- The excellence of the new calendar, with its epacts. 344
- The ecclesiastical calendar which, after the correction of the year carried out by Gregory XIII, the Church would have had to use down to the year 1700, if the golden numbers had been set out in it in place of the epacts. 94
- That the equation of the new calendar corresponds exactly for some past and future years, though not for all — which is enough. 84

- If the equation of the new calendar had begun from the Council of Nicaea, by what method it would supply 10 days to be removed down to the year 1600. 84
- That the calendar would not have needed correction, if the equinox, having advanced to 11 March, had of its own accord gone back to the 21st, with no remedy applied. 83
- The finding of the calends, ides, and nones by memory. 581
- That the calendar, whatever it be, cannot avoid four errors, and what they are. 360
- The calendar of Aloysius Lilius with the cycle of epacts. 5
- By what method the correction of the calendar is to be undertaken in a year other than the year 1582. 52
- The truly Gregorian calendar, according to the opinion of Viète. 506
- The Callippic period of 76 years. 86
- What the hollow and full lunar year is, both common and embolismic. 85
- Where, and when, the celebration of Easter is enjoined in Holy Scripture. 53
- Which centennial years will hereafter remain bissextile, and which not, but will become common. 74
- Why the centennial years were chosen for equating the year. 74
- The Council of Chalcedon, that of Antioch, and others confirm the decree of the Council of Nicaea concerning the celebration of Easter. 55
- What the civil year is. 70
- How great the civil lunar month is. 86
- What the civil lunar year is, of how many kinds, and how great. 85
- How the resolved table of the movable feasts for 70 years is constructed. 376
- A compendium for computing the Paschal full moons of 100 expanded years, from the Paschal full moon of the preceding centennial year. 536

- The compendium of the table for the equation of the epacts of Chapter 11, together with its use. 144
- Why the compendium of the new method of restoring the calendar was sent by Gregory XIII to the Princes. 3
- Not a few councils, and several Roman Pontiffs, desired the correction of the calendar. 1
- The decree of the Council of Caesarea in Palestine on celebrating Easter after the XIII Moon of the first month. 55
- The decree of the Council of Nicaea on celebrating Easter is confirmed by the Council of Antioch, that of Chalcedon, and others. 55
- A fragment of the epistle of the Council of Nicaea on the celebration of Easter. 55
- The Council of Antioch, that of Chalcedon, and others confirm the decree of the Council of Nicaea concerning the celebration of Easter. 55
- The Council of Nicaea fixed the seat of the equinox on 21 March. 3
- The Council of Nicaea entrusted the care of the golden-number cycle to Eusebius of Caesarea and to the Alexandrians. 56
- How many, and which, new moons the Council of Nicaea determines to be Paschal. 62
- That the Council of Nicaea confirmed, rather than instituted, that Easter be celebrated on the Sunday after the xiiij Moon of the first month. 55
- When the Council of Nicaea decrees that Easter is to be celebrated. 3
- The Council of Nicaea assigned 21 March to the vernal equinox. 62
- The source of the disputes over the celebration of Easter from the Council of Nicaea down to the Emperor Justinian. 71
- Copernicus's observations on the inequality of the year. 70
- By what method the correction of the calendar is to be undertaken in a year other than the year 1582. 52

- Why no one before Gregory XIII attained the perfect correction of the calendar. 1
- Which year is to be called the year of the correction. 65
- That the beginning of the golden-number cycle is taken successively from all the golden numbers, if the equation of the solar year and of the lunar year is applied. 337
- The Athenian Meton, inventor of the 19-year cycle of the golden number. 86
- Which 19-year cycles begin from the epact *, and which from j. 335
- That only two of all the thirty 19-year cycles of the expanded table have their seventh lunation embolismic, of 29 days. 338
- The perpetual little table of the cycle of epacts, with the table for the equation of that same cycle. 20
- The construction of the perpetual cycle of epacts. 142
- In what the correct [placement of the] cycle in the ordinary calendar consists. 519
- The finding of the solar cycle by arithmetic. 23
- The finding of the solar cycle from its own tables, in a threefold way. 361
- The finding of the solar cycle from a table beginning at the correction year 1582. 22
- The finding of the solar cycle by a table, for any proposed year. 33

Index Alphabeticus (continued)

Alphabetical index to the Explicatio Romani Calendarii. Entries are alphabetized by the Latin headword, so the English translations below keep the original sequence. Load-bearing numeral forms are preserved as printed (Roman xxv, xxiiij, xiiij versus Arabic 25, 19; a single* 1 for page one). Each entry is followed by its printed page reference, read off the leaf.*

C (continued) — *Cyclus / Cycli*

- Finding the solar cycle on the fingers, from memory. — 33
- Finding the solar cycle in the Ecclesiastical Computus, from its own table. — 591
- Why the cycle of the golden number in the old Calendar could take its beginning from no other number than 3. — 339
- That among the Alexandrians the cycle of the golden number always began from the last day of their year, and from golden number 1. — 337
- Why the cycle of the golden number — or any other that does not fill all the places of the Calendar — cannot stand unchangeable in the Calendar. — 166
- That Aloysius Lilius [Luigi Lilio] alone laid out a perpetual cycle of the Moon in the Calendar, and at the same time assigned a fixed seat to the equinox. — 1
- That no cycle, whatever it may be, can avoid every drawback. — 352
- That no cycle, whatever it may be and by whatever method laid out in the Calendar, can escape sometimes displaying the 15th Moon in the second month, or in the last, which is nevertheless taken as the Paschal Moon. — 356
- That any nineteen-year cycle of epacts begins either from the first day of January or from the last day of December. — 336
- That before the correction, after the Council of Nicaea, the cycle of the golden number always began from golden number 3 and from the first day of January. — 336
- Why most people judged it impossible for a perpetual lunar cycle to be laid out in the Calendar and for a fixed seat to be assigned to the equinox. — 1
- That the nineteen-year cycle of the golden number begins either from the golden number written at the Kalends of January, or from the one that would be assigned to the last day of December, if the solar year began there. — 336
- Why it always seemed difficult to inscribe a perpetual cycle in the Calendar. — 167
- How it may be known that every nineteen-year cycle contains 7 embolismic years, and which they are. — 337
- That the cycle of epacts in the Calendar shows how many days have usually elapsed after the true conjunction. — 353

- That the cycle of epacts is so arranged that the Paschal 14th Moons do not precede the mean oppositions by more than one day, and why. — 347
- The interruption of the cycle of Dominical letters, devised by Aloysius Lilius from the method of equating the equinox. — 4
- That any 19-year cycle of epacts begins either from * or from j. — 335
- The nineteen-year cycle of epacts can perpetually show the Paschal 14th Moon, provided an equation is applied at certain times. — 4
- In what sense the cycle of epacts of the new Calendar is said to be adaptable to any length of the year. — 167
- What the cycle of the golden number is. — 133
- That the cycle of Dominical letters is the same as the solar cycle. — 361
- The cycle of epacts inscribed in the Calendar can be adapted to any length of the year. — 11
- Why every nineteen-year cycle has one of its 7 embolismic lunations of only 29 days. — 337
- Which cycle should be chosen out of them all. — 347
- Why every nineteen-year cycle has years 3, 6, 9, 11, 14, 17 and 19 as embolismic. — 337
- What the solar cycle is. — 361
- That the cycle of Dominical letters was devised so that there should be no disagreement about which Sunday to observe. — 62
- The 400-year cycle of Dominical letters after the correction. — 372
- Whence the 28-year cycle of Dominical letters arises. — 365
- Why no cycle, whatever it may be, can exactly correspond to the celestial motions. — 352
- The ancient perpetual 28-year solar cycle, or cycle of Dominical letters, with the table of equation of the same cycle. — 27
- Why the table of equation of epacts covering 300,000 years was set out in chapter 11, although it is fallacious. — 155

D.

- Meton of Athens [Meton], inventor of the nineteen-year cycle of the golden number. — 86
- The decree of the Council of Nicaea on the celebration of Easter is confirmed by the Councils of Antioch, Chalcedon, and others. — 55
- The decree of the Council of Nicaea, on celebrating Easter. — 3

- The decree of the Council of Caesarea in Palestine on celebrating Easter after the 14th Moon of the first month. — 55
- The decree of St Pius, Pope and martyr, on celebrating [Easter] on the Lord's Day. — 55
- The decree of St Victor, Pope and martyr, on celebrating Easter on the Sunday after the 14th Moon of the first month. — 55
- The deficiency of the golden number for tracking the new moons. — 99
- That God, through Moses, commanded the observance of the first month, and of the 10th day and the 14th, in a rustic or simple manner suited to the understanding of the whole Israelite people. — 68
- That a day is sometimes called the last of one month which should more truly be called the first of the following month. — 353
- That in the civil solar year a day is sometimes called the first which would more truly be the last. — 353
- In how many years the intercalary day would have to be omitted according to Ptolemy's year. — 71
- Why the 10 days were removed all at once from the year 1582, and not one by one from individual years or months. — 65
- In how many years the intercalary day would have to be omitted according to the Alphonsine year. — 71
- In how many years the intercalary day would have to be omitted according to al-Battānī's [Albategnius] year. — 71
- How one may know from memory, on the fingers, for any given year, from which day of the week any day of the month takes its name. — 580
- That the intercalation of one day every fourth year is greater than it should be, and why. — 70
- How to find the number of days removed from the year 1700 inclusive up to any hundredth year inclusive. — 145
- How the number of days removed on account of the solar equation is reckoned. — 145.575
- Why the days removed on account of the equinox-equation must be added to the calculation of the lunations. — 172
- That the 21st of March, assigned to the equinox, holds the mean position between the 23rd day and the 19th, out to which the equinox can run, since from there it returns of its own accord to the 21st day. — 83
- That the difference between the true and the mean equinox does not reach one and a half days. — 79

- How great the difference is between 19 solar years and 235 mean lunations. — 86
- How great the maximum discrepancy is between the true and the mean equinox. — 79
- That the Christian Easter is to be celebrated on the first Sunday after the 14th Moon of the first month. — 54
- Finding the Dominical letter for any given year after the year 1700. — 25
- Finding the Dominical letter by means of the solar cycle, from a table. — 366
- Finding the Dominical letter from the 400-year cycle after the correction. — 372
- An easier way of finding the Dominical letter, without the solar cycle, from a table. — 369

D (continued) — *Dominicalis*

- Finding the Dominical letter in the Ecclesiastical Computus, by means of the solar cycle, from its own table. — 586
- Whence the 28-year cycle of Dominical letters arises. — 365
- Finding the Dominical letter from the year of the correction up to the year 1700 exclusive. — 24
- Finding the Dominical letter in the Ecclesiastical Computus, without the help of the solar cycle, from its own table. — 586
- Finding the Dominical letter from the perpetual solar cycle, for any given year. — 27
- How one may know from memory the number of Sundays between Pentecost and Advent. — 580
- That the cycle of Dominical letters is interrupted, on account of the method of equating the equinox devised by Aloysius Lilius. — 4
- That the Dominical letters found for the first 4 years of Christ according to the prescription of the Calendar differ from those actually in use at that time. — 372
- Finding the Dominical letter on the fingers, from memory. — 571
- A perpetual table of Dominical letters from the year 1700 inclusive, if in every 400 years three bissextiles are omitted, together with the table of equation of the same table. — 25

E.

- Why the Church preferred Easter to be movable rather than fixed. — 54
- That the Church celebrates two kinds of feasts. — 1
- That the Church has more at heart the peace of the faithful in the celebration of Easter than an exact observation of the equinox and the course of the Moon. — 73
- That in adopting a lunar cycle the Church follows all antiquity. — 69
- That the Church does not contradict the decrees of the Fathers, even though it sometimes celebrates Easter in the last month or in the second, since this can in no way be avoided. — 72
- That the Church is not greatly anxious about the true or mean new and full moons, since in tracking them it has always used cycles. — 68
- That the Church freely observes the equinox and the Moon in the solemnity of Easter; and why it observes them. — 73
- That the Church considers only the mean motions, for many reasons. — 66
- What the Church does when in some year there is no Paschal full moon. — 356
- The old Ecclesiastical Calendar, which the Church used from the Council of Nicaea up to the correction of the year made by Gregory XIII. — 90
- The Ecclesiastical Calendar which the Church ought to use after the correction of the year made by Gregory XIII, up to the year 1700, if the golden numbers had been written in it in place of the epacts. — 94
- Why it is not absurd that the ecclesiastical equinox should sometimes differ from the true one. — 73
- How long the ecclesiastical year is according to the reckoning of Julius Caesar. — 65
- By how much the ecclesiastical year — the Roman, or Julian — is longer than the Alphonsine year. — 65
- When the embolismic year contains 384 days, and when. — 337
- What the embolismic lunar year and the common year are, both full and hollow. — 85
- That the embolisms and the leap of the Moon bring it about that sometimes two or three consecutive lunations are of 29 days, and two, three, or four of 30 days. — 341
- Which are the embolismic years containing only 383 days, and the common years of 353 days. — 341
- What an embolism is. — 337

- In praise of the new Calendar. — 167
- How the epact of any year is obtained from the expanded table and its equation. — 141
- By which table the epact is more correctly found after the year 8200. — 141
- That the epact of each year begins in January. — 142
- Why epact xxiiij is not used in the same cycle when epact xxv and a golden number not greater than 11 concur; likewise why epact xxvi is not in use in the same cycle when epact 25 and a golden number greater than 11 concur. — 102
- What the epacts are, and why they are 30. — 100
- How the epact of each year is formed from the epact of the preceding year. — 165
- Finding the epact for any year, from the perpetual cycle of epacts. — 142
- How the embolismic epacts are perpetually known from the table of new moons. — 344
- Why every epact must be less than 30. — 100
- That when epact xvij concurs with golden number 19 it is embolismic, otherwise not. — 338.339
- Why epact 19 is placed in the Calendar in a different colour or type, at the last day of December, opposite epact xx. — 103
- What the epacts of years and of months are, and how they are gathered and reduced to tables. — 168
- Why the epacts are arranged in the Calendar in retrograde order. — 101
- That epact 19, placed at the last day of December opposite epact xx, does not produce two new moons on the same day in the same nineteen-year cycle. — 104
- By what method Scaliger [Joseph Scaliger] investigates the epact of any year. — 612
- That epact 25, placed in a different colour or type opposite epact xxvi, does not disturb the lunations. — 102
- Why the epacts are so called. — 100
- Why two epacts are assigned to the same day in six places of the Calendar. — 101
- A more accurate way of finding the epact of any year than was given in No. 5 of chapter 12. — 154
- That epact 25, written in a different colour or type above epact xxv, does not cause two new moons in the same cycle to fall on the same day. — 01

- How the corrupted epacts are gathered for computing the new moons after the correction. — 530
- Finding the epact of any year in the Ecclesiastical Computus, from its own table. — 159
- That the epacts arranged in the Calendar do not keep the order of the Cycle. — 101
- Why the epact concurring with golden number 1 is formed from the epact concurring with golden number 19 by adding 12. — 165
- That the epact of the following year is usually shown by the days of December that remain after the last lunation of the year. — 104
- Finding the epact of any year on the fingers, from memory. — 564
- Why epact 25 must be written in a different type or colour above the other epact xxv in six places of the Calendar. — 101
- Finding the epact from the perpetual cycle. — 20
- Why the epacts in the Calendar were not moved up by one day, so that they might indicate the new moons earlier than they now do. — 347
- Why the epacts in the expanded table do not show, for the times of the Council of Nicaea, the golden numbers as they are arranged in the old Calendar. — 343
- That only 19 epacts out of all 30 are used in any one or more centuries for showing the new moons. — 105
- How the epacts are arranged in the Calendar. — 101
- Which are the embolismic epacts having a thirteenth lunation of 30 days and embolismic. — 339
- When the embolismic epacts having a 13th lunation of 30 days have the first lunation of the year of 29 days. — 339
- That epacts xviii and xix, concurring with golden number 19, have the 13th lunation embolismic and of 29 days. — 340

E (continued) — *Epacta / Epactarum*

- Which are the embolismic epacts having the first lunation of the year embolismic and of 29 days; and when the same epacts have the second lunation embolismic and of 30 days. — 340
- By what method Viète [François Viète] investigates the epact for any year. — 524
- When epacts one unit greater or less than those in use are to be taken. — 105

- By what method the epacts can perpetually indicate the new moons in the Calendar. — 104
- That some epacts, in the years of the same century, show their 14th Moons before the mean oppositions, others after them. — 358
- A perpetual table of the cycle of epacts, with the table of equation of the same cycle. — 20
- How the equation of the epacts was established by Aloysius Lilius according to the Alphonsine year. — 9
- Why the equation of epacts set out in the Calendar of the Compendium was rejected, and another established in the new Calendar. — 103
- The nineteen-year cycle of epacts can perpetually show the Paschal 14th Moon, provided an equation is applied at certain times. — 4
- That the cycle of epacts is so arranged that the Paschal 14th Moons do not precede the mean oppositions by more than one day, and why. — 347
- The cycle of epacts inscribed in the Calendar can be adapted to any length of the year. — 11
- In what sense the cycle of epacts of the new Calendar is said to be adaptable to any length of the year. — 167
- A table of the epacts corresponding to the golden numbers before the correction of the Calendar. — 18
- Some temporary tables of the epacts corresponding to the golden numbers after the correction of the Calendar. — 19
- Why the placement of the epacts and their equation in the Gregorian Calendar cannot justly be criticized. — 518
- By what method the equation of epacts should be established, following the opinion of Nicolaus Copernicus, according to the varying length of the year. — 12
- That the arrangement of the epacts in the Calendar cannot justly be criticized. — 351
- The expanded table of epacts, together with the table of equation according to Lilius's intention, and with the days removed on account of the equinox-equation. — 110
- Some temporary tables of epacts, according to Aloysius Lilius, and their use. — 11
- The expanded table of epacts of Aloysius Lilius, with the table of equation of the same epacts. — 9.& 10

- That the cycle of epacts in the Calendar shows how many days have usually elapsed after the true conjunction. — 353
- How the expanded table of epacts is constructed. — 195
- That the same epact now shows the 14th Moon anticipated, now delayed, now finally in agreement with the Canons. — 502
- How the table of equation of epacts is constructed. — 106
- Where the root of the equation of epacts is to be fixed. — 107
- Why letters of the alphabet, rather than years of the Lord, were assigned to the lines of the epacts in the expanded table. — 106
- Why the following epact is not always formed from the preceding one by adding 11 or 12. — 166
- That the epacts do not change their places in the Calendar, even if the table of equation must be renewed. — 166
- That the epacts were rightly substituted in the place of the golden numbers. — 100
- That the epacts of the new Calendar hold a middle course in the anticipation and postponement of the new moons. — 352
- That the epacts could not be better placed than they have been in the new Calendar. — 352
- That the epacts of the new Calendar rightly indicate the new moons after the mean conjunctions. — 353
- That the epacts are not to be investigated by the table of equation of chapter 11 after the year 8200. — 131
- That some epacts in any cycle do not show suitable 14th Moons. — 518
- How it may be known that the epacts are rightly placed and equated in the Calendar. — 358
- That the epacts rightly indicate the 14th Moons is shown by the temporary table of movable feasts from the year 1600 to the year 5000. — 502
- That the epacts rightly succeeded to the place of the golden numbers, and are suitably arranged in the Calendar in retrograde order. — 104 [?]
- That all 30 epacts could also be arranged in the Calendar in direct order. — 105
- That eleven epacts are always embolismic, and which they are. — 338
- How it may be known, from the expanded table and from the 35 tables of lunations of chapter 16, that eleven epacts alone are always embolismic. — 338

- A fragment of the letter of the Council of Nicaea on the celebration of Easter. — 55
- The error of certain people in defining the first month. — 61
- By whom the errors of the Calendar of the Council of Nicaea were chiefly detected, and who wrote about their emendation. — 2
- That four errors can be avoided in no Calendar, and what they are. — 360
- That many Supreme Pontiffs attempted to correct the error of the equinox and of the 14th Moon. — 33
- That the care of the cycle of the golden number was entrusted by the Nicene Council to Eusebius of Caesarea [Eusebius of Caesarea] and to the Alexandrians. — 56

F.

- The immovable feasts require only the use of solar months. — 1
- What the movable feasts are. — 375
- The movable feasts require both solar and lunar months. — 1
- Two kinds of feasts are celebrated by the Church. — 1
- Finding the movable feasts from a double perpetual table. — 29
- A very easy way of finding the movable feasts from the resolved table of 70 years. — 376
- Finding the movable feasts in the Ecclesiastical Computus, from a table. — 595
- Finding the movable feasts on the fingers, from memory. — 577
- What the roots of the movable feasts are. — 577
- A temporary table of the movable feasts from the year 1582 to the year 1631. — 32
- The old table of the movable feasts, reformed and made perpetual. — 33
- The new table of the movable feasts, reformed and made perpetual. — 34
- A fragment of the letter of the Council of Nicaea on the celebration of Easter. — 55

G.

- In what the perpetuity and perfection of the Gregorian Calendar consists. — 73
- Why the Gregorian Calendar is called perpetual. — 167
- In what respects the Gregorian Calendar is criticized by many. — 540

Index Alphabeticus (continued)

*Alphabetical index to the Explicatio Romani Calendarii**. The entries are translated but kept in their printed order under each letter-heading; the trailing figure is the page reference exactly as printed. Two columns per leaf, read left column then right.*

G (continued)

- Gregorian Calendar for the correction year 1582, comprising the last three months of that year. — 49
- The Gregorian Calendar, with the Epacts distributed through the days of the months. — 36
- That Gregory XIII's intention in correcting the Calendar was not what Viète [Vieta; François Viète] imagines it to have been. — 519
- Gregory XIII's Bull on the corrected Calendar. — 13
- Why Gregory XIII sent the *Compendium* of the new method of restoring the Calendar to the [Christian] Princes. — 3
- Gregory XIII resolved to follow the consensus of the whole Christian world in correcting the Calendar. — 12
- According to which opinion Gregory XIII restored the equinox. — 65

H.

- When the Hebrews used to celebrate Passover, by divine command. — 53
- Which was the first month of the Hebrews. — 54
- The troubles that would have beset history, chronology, and the chief festivals of the year had the Calendar not been corrected. — 63

I

- Finding the Ides, Nones, and Kalends from memory. — 581
- The immovable feasts require only the use of the solar months. — 1
- Finding the Indiction in the Ecclesiastical Computus, from its own table. — 594
- Finding the Indiction on the fingers, from memory. — 582
- Finding the Indiction from the year 1582. — 28
- Finding the Indiction for any given year by a table. — 28
- Finding the Indiction by arithmetic. — 29
- What method was adopted for keeping intercalation tied to the equinox near 21 March. — 69

- The two ways of keeping the equinox on 21 March by intercalation. — 71
- In how many years the intercalary day would have to be omitted according to al-Battānī's [Albategnij] year. — 71
- By what reckoning the omission of the intercalary day in the centennial years — every four-hundredth excepted — squares with the Alphonsine year. — 74
- In how many years the intercalary day would have to be omitted according to the Alphonsine year. — 71
- In how many years the intercalary day would have to be omitted according to Ptolemy's [Ptolemæi] year. — 71
- That the intercalation established for the mean year introduces no inconvenience of any moment. — 72
- By what device the scheme of intercalation established for the mean year corrects itself. — 71
- That the intercalation of one day every fourth year is greater than it ought to be, and why. — 70
- Who was the inventor of the nineteen-year Cycle of the golden number. — 86
- When the Jews used to celebrate Passover, by divine command. — 53
- Which was the first month of the Jews. — 54
- That the table of Jewish new moons proposed by Scaliger [Scaligero; Joseph Scaliger] does not sufficiently agree with the perpetual Cycle of Epacts. — 542
- How long the year of Julius Caesar and the Ecclesiastical year each are. — 65

K.

- The Κριτικὰ [Greek: Kritika, "critical objections"] of Viète against the Gregorian Calendar, and their solutions. — 515

L.

- Lilius's [Lilij; Aloysius Lilius] Calendar with the Cycle of Epacts. — 5
- Lilius's table of expanded Epacts, with the subsidiary table for the equation of those same Epacts. — 9 & 10
- That it is not strictly necessary to correct Lilius's table of the equation. — 150
- Why Lilius wished to propose his own equation, though over widely separated ages it is fallacious. — 150

- What Lilius and the correctors of the Calendar had in view in the equation of the Epacts. — 518
- Lilius the first author of the new Gregorian Calendar, in the Epistle to the Reader. —
- How Lilius established the equation of the Epacts according to the Alphonsine year. — 9
- What remedy Lilius devised for assigning a fixed seat to the equinox. — 3
- That Lilius alone described a perpetual Cycle of the Moon in the Calendar and at the same time assigned a fixed seat to the equinox. — 1
- By what method the letter of the expanded table — or of the perpetual Cycle of Epacts — is found by arithmetic, in order to investigate the Epact of any given year. — 145
- Finding the Dominical letter in the Ecclesiastical Computus, without the Solar Cycle, from its own table. — 593
- Finding the Dominical letter from the perpetual Solar Cycle, for any year proposed. — 27
- Finding the Dominical letter for any year proposed after the year 1700. — 25
- Finding the Dominical letter from the correction year up to the year 1700 exclusive. — 24
- Finding the Dominical letter from the 400-year Cycle, after the correction. — 372
- Finding the Dominical letter by the Solar Cycle, from a table. — 366
- An easier finding of the Dominical letter, without the Solar Cycle, from a table. — 369
- Finding the Dominical letter in the Ecclesiastical Computus, by aid of the Solar cycle, from its own table. — 586
- Finding the Dominical letter on the fingers, from memory. — 571
- Finding the letter of the Martyrology from memory. — 564
- Finding the letter of the Martyrology in the Ecclesiastical Computus, from a table. — 585
- A more accurate finding of the letter of the expanded table over widely separated ages. — 153
- That the letter of the expanded table is sought in vain beyond 100000 or 200000 years. — 154

- The table of Dominical letters, perpetual from the year 1700 inclusive provided that every 400 years three bissextiles are omitted, together with the table for the equation of that same table. — 23
- The 400-year Cycle of Dominical letters after the correction. — 372
- Whence the 28-year Cycle of Dominical letters arises. — 365
- That the figures for the equation of the Epacts in the table of chapter 11 progress, after 10000 years, in the same proportion as before, and why. — 132
- That the Dominical letters found for the first four years of Christ according to the prescription of the Calendar differ from those actually then in use, and why they then differed. — 372
- When the Moon is to be called "first" according to Bede [Bedam]. — 352
- When the Moon is to be called "first" according to Campanus [Campanum]. — 352
- What the fourteenth Moon is according to Theophilus and St. Cyril. — 353
- That the great period of 3400 years does not, as Viète supposes, accurately restore the synodic months of the Moon. — 528
- In which years between 1600 and 5000 the fourteenth Moons appear to run ahead of the mean oppositions more than is proper. — 502

(L continues on the next leaf.)

- That the fourteenth Moon was falsely indicated by the golden number before the correction. — 3
- That the error of the Paschal fourteenth Moon, when it anticipates the mean opposition by more than is proper, is often corrected by means of the Dominical letter. — 352
- That Aloysius Lilius alone described a perpetual Cycle of the Moon in the Calendar and at the same time assigned a fixed seat to the equinox. — 1
- How great the anticipation of the Moon is in 19 years, and in 76. — 4
- That the Paschal fourteenth Moon can be indicated in the Calendar by the Cycle of Epacts, if at certain times an equation is applied. — 4
- Why the Paschal fourteenth Moon cannot be indicated perpetually in the Calendar by the golden number. — 4
- By what device the postponement of the Moon in every centennial year is found. — 149
- By what method the place of the Moon in the Zodiac is found, more or less, from memory. — 584

- That the Paschal fourteenth Moon is not rightly understood by some. — 346
- What the Paschal fourteenth Moon is, according to the usage of the Church. — 346
- By what device it may be known from memory for how many hours the Moon shines at night. — 584
- What the astronomical lunar year is, and how long, both common and embolismic. — 86
- That the lunar and solar months are required for celebrating the movable feasts. — 1
- Why most have thought it impossible to describe a perpetual Lunar Cycle in the Calendar and to assign a fixed seat to the equinox. — 1
- That 235 civil lunar months are made in 19 solar years. — 86
- Why the lunar months in the Calendar are alternately of 30 and 29 days. — 86
- Why the lunar and solar year alike had to be corrected. — 1
- How great the half of a lunar month, and its quarter part, are. — 86
- How great the astronomical lunar month is according to the mean motion. — 86
- Why the equation of the lunar months was made rather by the Epacts xxv and xxiiij set together than by others. — 102
- What the lunar year, both common and embolismic, full and hollow, is. — 85
- How great the civil lunar month is. — 86
- What the civil lunar year is — of how many kinds and how long. — 85
- That 235 mean lunar months are made in 19 solar years. — 86
- That Scaliger's fourteenth Moons very often occur two, three, or even four days before the Gregorian fourteenth Moons. — 546
- That the first lunation of an embolismic year ends on some one of the first 11 days of January, and why. — 338
- That the thirteenth lunation ends, in an embolismic year, on some one of the last 11 days of December, and why. — 338
- That a lunation is assigned to the month in which it ends, and why. — 335
- That a lunation in bissextile years sometimes contains 31 days, and why this is not absurd. — 512
- The calculation of the lunations carried down to fourths (quartæ). — 552
- Which one of the 13 lunations of an embolismic year is to be called the embolismic lunation. — 339

- That the lunations anticipate one day in 312½ years, but not in 304 years, as some would have it. — 384
- Why the lunations in a bissextile year, after the intercalary day, are later than is proper. — 352
- That according to Viète some lunations contain only 28 days, indeed 27. — 511
- That two or more continuous lunations are sometimes of 29 or 30 days, which is neither novel nor absurd. — 341
- That 235 civil lunations are made in 19 solar years. — 87
- That the first lunation of the year following an embolismic year always begins from some embolismic Epact, except in that embolism in which the Epact xix does not concur with the golden number 19, and why. — 338

M.

- That 235 civil lunations contained within 19 years fill out, by their reckoning, the same span as the same number of mean lunations — even though in each of them there are omitted 4 minutes, 4 seconds, 3 thirds, and 11 fourths of one hour. — 87
- That 235 mean lunations are made in 19 solar years. — 86
- Which are the lunations Paschal by the Council of Nicaea, yet rejected before the correction of the Calendar as non-Paschal because of the error of the equinox. — 63
- That the lunations are made alternately of 30 and 29 days, on account of the assignment of two Epacts to the same day in six places of the Calendar. — 101
- Why the lunations in the Calendar are alternately of 30 and 29 days. — 86
- Why the Paschal lunations in the new Calendar are not all of 29 days, as in the old. — 103
- By what reckoning thirteen lunations can be contained within one year. — 337
- That from the first lunation of the year, on account of the equation of the Moon, one day is necessarily taken away or added. — 512
- How the letter of the Martyrology is found from memory. — 569
- Why the greatest year is not suited for the equation of the solar year. — 71
- That only the mean motions are considered by the Church, for many reasons. — 66

- That the mean motions are useful for judging which Cycle of several more correctly indicates the fourteenth Moon in the Calendar. — 69
- When the mean equinox precedes, and when it follows, the true. — 79
- That the mean equinox can be distant from the true by a whole four days — some have falsely supposed — and why. — 79
- When the mean equinox occurs. — 79
- That it is not the mean equinox when the line of the Sun's mean motion is joined with the point of the mean equinox. — 80
- That the mean year, that is the Alphonsine, is alone suited for equating to the solar year. — 71
- That the first month is rightly said to be that whose fourteenth Moon falls on the day of the equinox, or next follows it. — 61
- That 235 mean lunar months are made in 19 solar years. — 86
- Why the lunar months in the Calendar are alternately of 30 and 29 days. — 86
- That 235 civil lunar months are made in 19 solar years. — 87
- Which is the first month of the Jews. — 54
- How great the half of a lunar month, and its quarter part, are. — 86
- That both solar and lunar months are required for celebrating the movable feasts. — 1
- How great the astronomical lunar month is according to the mean motion. — 86
- How great the civil lunar month is. — 86
- That the first month is not rightly defined by some. — 61
- Why the equation of the lunar months was made rather by the Epacts xxv and xxiiij set together than by others. — 102
- That the use only of the solar months is required for celebrating the immovable feasts. — 1
- Meton of Athens [Atheniensis], inventor of the nineteen-year Cycle of the golden number. — 86
- The Metonic nineteen-year cycle. — 86
- Why the smallest year is not suited for equating to the solar year. — 71
- What the movable feasts are. — 375
- That the movable feasts require both solar and lunar months. — 1
- Finding the movable feasts in the Ecclesiastical Computus, from a table. — 595

- Finding the movable feasts from a double perpetual table. — 29

(M continues on the next leaf.)

- Finding the movable feasts on the fingers, from memory. — 576
- A very easy finding of the movable feasts from a resolved table of 70 years. — 376
- What the roots of the movable feasts are. — 577
- The temporary table of movable feasts from the year 1582 up to the year 1631. — 32
- The new reformed and perpetual table of movable feasts. — 34
- The old reformed and perpetual table of movable feasts. — 33
- That only the mean motions are considered by the Church, for many reasons. — 66
- That the mean motions are useful for judging which Cycle of several more correctly exhibits the fourteenth Moon in the Calendar. — 69
- That Moses [Moysen] commanded the observance of the first month, and of the 10th day, and of the 14th, in a rustic or simple fashion, adapted to the understanding of the whole people of Israel. — 68

N

- That the table of Jewish new moons [Neomeniæ] proposed by Scaliger does not sufficiently agree with the perpetual Cycle of Epacts. — 542
- By what method the successions of the new moons are gathered. — 537
- The succession of the new moons from century to century, according to Viète's opinion. — 529
- The truer succession of the new moons from century to century after the correction — how great it is. — 529
- The succession of the new moons from century to century before the correction — how great it is. — 529
- That the decree of the Nicene Council on the celebration of Easter is confirmed by the Councils of Antioch, Chalcedon, and others. — 55
- A fragment of the epistle of the Nicene Council on the celebration of Easter. — 55
- That the Nicene Council rather confirmed than instituted that Easter be celebrated on the Sunday after the fourteenth Moon of the first month. — 55

- That the Nicene Council entrusted the care of the Cycle of the golden number to Eusebius of Caesarea and to the Alexandrians. — 56
- That the Nicene Council fixed the seat of the equinox on 21 March. — 3
- How many and which new moons the Nicene Council determines to be Paschal. — 62
- When the Nicene Council decrees that Easter is to be celebrated. — 55
- That the Nicene Council assigned 21 March to the vernal equinox. — 62
- Nicolaus Copernicus's [Nicolai Copernici] observations on the inequality of the year. — 70
- Finding the Nones, Ides, and Kalends from memory. — 581
- Why the new moons in any year mostly fall 11 days earlier than in the immediately preceding year. — 86
- That new moons too much postponed cause Easter sometimes to be celebrated in the last month. — 351
- By what reckoning the new moons and full moons are sought from the tables of Epacts. — 171
- How the new moons are investigated, according to the usage of the Church, from the Epacts arranged in the Calendar. — 104
- By what reckoning the new moons can be indicated perpetually by the Epacts in the Calendar. — 104
- How much the new moons had anticipated from the time of the Nicene Council up to the correction year 1582. — 99
- That the new moons of the golden numbers around the time of the Nicene Council were nearly the same as those occurring in the heavens. — 107
- That the new moons of the golden numbers around the year of the Lord 130 fell later than in the heavens, and so more fittingly for the usage of the Church. — 107
- That if the conjunctions which occur in the heavens were not to follow, Easter would often be celebrated before the full moon. — 347
- That the new moons and the equinox, at the time when the Calendar was being corrected by Gregory XIII, did not fall on the same days as at the time of the Nicene Council. — 63
- That the new moons must, according to the usage of the Church, be indicated by the Cycle after the celestial new moons. — 107
- How the new moons are investigated from the golden numbers arranged in the Calendar. — 99

- How many and which the Paschal new moons are, by the decree of the Nicene Council. — 62
- Which are the new moons Paschal by the Council of Nicaea, yet rejected before the correction of the Calendar as non-Paschal because of the error of the equinox. — 63
- That the new moons were investigated by the golden numbers arranged in the Calendar before the correction of the year, so that all might celebrate the new moons on the same days. — 62
- That the new moons in the Calendar were, with mature counsel, postponed to the celestial new moons. — 20
- How the new and full moons in the centennial common years are found from the table of new moons. — 253
- Finding the new moon and full moon in any month from the year 1501 up to 1576, from the table of new moons. — 253
- Finding the new moon and full moon after the correction year 1582, from the table of new moons. — 253
- Finding the new moon and full moon in any month after the year 1576 up to the Gregorian correction, from the table of new moons. — 253
- What is to be done when the new moon or full moon sought falls beyond the month proposed. — 172
- Finding the new moons in the Computus, from its own table. — 590
- Finding the new moons from memory. — 565
- The perpetual table of new moons. — 344
- How the Paschal new moon and full moon are computed by the successions of the new moons. — 539
- How the Paschal new or full moon of any expanded year is elicited from the new or full moon of the nearest preceding centennial year. — 533
- How the new or full moon of any month is derived from the new or full moon of March or April. — 535
- How the Paschal new moon of any centennial year after the correction is computed by the corrected Epacts. — 533
- That the Paschal new moon of 5 April ceases to be Paschal when the transit is made from the upper line of the expanded table to the lower; and the non-Paschal new moon of 7 March begins to be Paschal. — 354
- That the Paschal new moon of 8 March ceases to be Paschal when the transit is made from the lower line of the expanded table to the upper; and the non-Paschal new moon of 6 April begins to be Paschal. — 354

O.

- Wherein the right ordering of the Cycle in the Calendar consists. — 519
- The order among the golden numbers in the Calendar. — 88
- The order which the author of this book follows. — 2

P.

- When, before the correction of the year, Easter was celebrated in the second month, because of the error of the equinox. — 63
- That after some years, unless the Calendar had been corrected, Easter would always have come to be celebrated in the second month, the third, the fourth, and so on, because of the rising of the equinox toward the beginnings of the months. — 63
- When, before the correction of the year, Easter was celebrated on the twenty-fifth Moon (Luna xxv)... (*entry continues on the next leaf*)

Each entry is given as the verbatim Latin index-phrase (*italic*), an English rendering, and the printed page reference. Section-letter divisions are marked as in the source. Reading order is left column top-to-bottom, then right column, on each leaf; this coincides with the alphabetical run. The index is unpaginated (leaves carry gathering signatures, not page numbers).

P (continued)

...xxv. ob Nouiluniorum per aureos numeros inuentorum errorem. — [continuation of the preceding entry] ...by 25 [days], on account of the error of the new moons found by means of the golden numbers. → 63

Pascha post aliquot annos, nisi correctum fuisset Calendarium, celebrari contigisset in Nouilunio, Luna ij. iij. &c. ob errorem Nouiluniorum, quæ per aureos numeros inquirebantur. — Easter, after some years, had the Calendar not been corrected, would have happened to be celebrated at the new moon, on Luna ij, iij, etc., because of the error of the new moons, which were sought through the golden numbers. → 63

Pascha ante emendationem anni, ob æquinotij errorem, & Lunæ xiiij. ex aureis numeris inuentæ, sæpe celebratum est cum errore 7. aut 28. aut etiam 35. dierum. — Before the correction of the year, Easter was often celebrated with an error of 7, or 28, or even 35 days, on account of the error of the equinox and of Luna xiiij as found from the golden numbers. → 63

Pascha post multos annos, nisi Calēdarium fuisset correctum, celebrari contigisset cum errore 42. dierum, & eo amplius. — After many years, had the Calendar not been corrected, Easter would have happened to be celebrated with an error of 42 days, and even more. → 63

Pascha interdum celebrari vel in vltimo mense, vel in secundo non repugnat Decretis Patrum, cū id nullo modo vitari possit: neque nouum est. — That Easter is sometimes celebrated either in the last month or in the second is not contrary to the Decrees of the Fathers, since it cannot in any way be avoided; nor is it anything new. → 72

Pascha ex decreto Concilij Nicæni quando celebrandum sit. — When Easter is to be celebrated according to the decree of the Council of Nicaea. → 3

Pascha non esse celebrandum Luna xv. falso nonnulli opinantur. — Some wrongly suppose that Easter is not to be celebrated on Luna xv. → 346

Pascha Christianorum ne cum Iudæis celebretur, quo modo prohibitum sit. — In what way it was forbidden that the Christians' Easter be celebrated together with the Jews. → 346

Pascha frequenter celebratum esse in Ecclesia Luna. xv. — That Easter has frequently been celebrated in the Church on Luna xv. → 346

Pascha interdum celebrari vel in secundo mense, vel in vltimo, nouum non est, propter annos communes, & bissextiles. — That Easter is sometimes celebrated either in the second month or in the last is nothing new, on account of common and bissextile years. → 72

Pascha necessario celebratum esse interdum & in secundo mense, & in vltimo, etiam ipsis Concilij Nicæni temporibus. — That Easter necessarily was celebrated at times both in the second month and in the last, even in the very times of the Council of Nicaea. → 72

Pascha cur ab Ecclesia statuatur mobile potius, quàm fixum. — Why Easter is fixed by the Church as movable rather than fixed. → 54

Pascha Christianum Dominica prima post Lunam xiiij primi mensis celebrandum esse. — That the Christian Easter is to be celebrated on the first Sunday after Luna xiiij of the first month. → 54

Pascha quando à Iudæis celebrabatur ex præcepto diuino. — When Easter was celebrated by the Jews by divine command. → 53

Pascha die Dominica post Lunam xiiij. primi mensis celebratum esse temporibus Apostolorum, esseque traditionem Apostolicam, ita esse celebrandum. — That Easter was celebrated on the Sunday after Luna xiiij of the first month in the times of the Apostles, and that it is an Apostolic tradition that it be so celebrated. → 56

Pascha semper celebratam esse, & celebrari debere Dominica prima post Lunam xiiij. etiamsi ea Dominica in Lunam xv. incidat, contra quosdam, qui id negant. — That Easter always has been, and ought to be, celebrated on the first Sunday after Luna xiiij, even if that Sunday falls on Luna xv — against certain persons who deny this. → 57

Pascha vt rite celebretur, tria obseruanda sunt ex decretis Pontificum, & Conciliorum. — For Easter to be duly celebrated, three things are to be observed from the decrees of the Popes and the Councils. → 62

Pascha quot diebus anni, & quibus celebrari possit, ex decreto Concilij Nicæni. — On how many days of the year, and which, Easter may be celebrated, according to the decree of the Council of Nicaea. → 62

Pascha circa tempora Concilij Nicæni frequenter incidisse quasi in Lunā xiiij. eo quod Nouilunia nimis cito ab aureis numeris monstrabantur. — That around the time of the Council of Nicaea Easter frequently fell almost on Luna xiiij, because the new moons were shown too early by the golden numbers. → 350

Paschæ celebratio cur post Concilium etiam Nicænum tot dissensiones inter Orientalem, & Occidentalem Ecclesiam excitauerit. — Why the celebration of Easter, even after the Council of Nicaea, stirred up so many disputes between the Eastern and Western Church. → 350

Pascha sæpius non recte celebraretur, si Epactæ citius Nouilunia indicarent, quam nunc indicant. — Easter would more often be wrongly celebrated if the epacts indicated the new moons earlier than they now do. → 351

Pascha anni 1598. ex die 22. Martij in 29. reijciendum fuisse, non recte à quibusdam affirmari. — That some wrongly assert that the Easter of the year 1598 should have been moved from the 22nd of March to the 29th. → 351

Pascha sæpe celebraretur ante Plenilunium, si Nouilunia Cycli non subsequerētur coniunctiones, quæ in cælo fiunt. — Easter would often be celebrated before the full moon, if the new moons of the Cycle did not follow the conjunctions that take place in the heavens. → 347

Pascha celebrandum esse die Dominica post Lunam xiiij. confirmatum fuisse potius à Concilio Nicæno, quàm institutum. — That the celebration of Easter on the Sunday after Luna xiiij was confirmed by the Council of Nicaea rather than instituted by it. → 55

Pascha sæpenumero non haberetur in anno aliquo, si motus medij, non autem Cycli, ab Ecclesia obseruarentur. — That very often there would be no Easter in some year, if the mean motions, and not the Cycle, were observed by the Church. → 356

Pascha in Calendario nouo raro celebrari ante mediam oppositionem fere, ita vt ipsam aliquo modo non attingat. — That in the new Calendar Easter is rarely celebrated before roughly the mean opposition, in such a way that it does not in some measure reach it. → 351

Pascha ab aureo numero eodem reijci aliquando ex Martio in Aprilem, & contra. — That under the same golden number Easter is sometimes moved from March into April, and the reverse. → 357

Pascha apud Vietam, secundum posteriorem tabulam æquationis, sæpius in mense vltimo celebrari. — That in Viète, according to the later table of equation, Easter is more often celebrated in the last month. → 525

Pascha vno eodemque die in omnibus mundi partibus esse celebrandum. — That Easter is to be celebrated on one and the same day in all parts of the world. → 505

Paschæ inuentio in Calendario per Epactam, & literam Dominicalem, vna cum alijs festis mobilibus. — The finding of Easter in the Calendar by means of the epact and the Dominical letter, together with the other movable feasts. → 29

Paschæ celebratio vbi, & quando præcipiatur in sacra Scriptura. — Where and when the celebration of Easter is commanded in Sacred Scripture. → 53

Pascha apud Vietam, secundum priorem tabulam æquationis, non raro in secundo mense celebrari. — That in Viète, according to the earlier table of equation, Easter is not rarely celebrated in the second month. → 524

Paschale Nouilunium aut Plenilunium cuiusuis anni expansi, quo pacto ex Nouilunio, plenilunioe centesimi anni proxime antecedentis eliciatur. — By what method the Paschal new moon or full moon of any expanded year is drawn out from the new or full moon of the immediately preceding centennial year. → 533

Paschale plenilunim [recte: plenilunium] quando in Martium, & quando in Aprilem cadat. — When the Paschal full moon falls in March, and when in April. → 533

Paschale Nouilunium diei 5. Aprilis desint [recte: desinit] esse Paschale, quando fit transitus de superiori linea tabulæ expansæ ad inferiorem; & Nouilunium non Paschale diei 7. Martij incipit esse Paschale. — The new moon of 5 April ceases to be Paschal when the passage is made from the upper line of the expanded table to the lower; and the non-Paschal new moon of 7 March begins to be Paschal. → 354

Paschale Nouilunium cuiusuis centesimi post correctionem, quo pacto per Epactas correctas supputetur. — By what method the Paschal new moon of any centennial year after the correction is reckoned by the corrected epacts. → 533

Paschale Nouilunium diei 8. Martij desinit esse Paschale, quando fit transitus de inferiori linea tabulæ expansæ ad superiorem, & Nouilunium non Paschale diei 6. Aprilis incipit esse Paschale. — The new moon of 8 March ceases to be Paschal when the passage is made from the lower line of the expanded table to the upper, and the non-Paschal new moon of 6 April begins to be Paschal. → 354

Pascha raro in vltimum, vel secundum mensem in nouo Calendario incurrere. — That in the new Calendar Easter rarely runs into the last or second month. → 83

Pascha celebrari nonnunquam in secundo mense, error dici non debet, cum id vitari nequeat, propter duos dies, quos æquinotium postulat, siue nouum Calendarium recipiatur, siue vetus retineatur. — That Easter being sometimes celebrated in the second month ought not to be called an error, since it cannot be avoided, on account of the two days that the equinox requires, whether the new Calendar be adopted or the old retained. → 83

Paschalia Nouilunia quot & quæ sint, ex decreto Concilij Nicæni. — How many the Paschal new moons are, and which, according to the decree of the Council of Nicaea. → 62

Paschale plenilunium medium nullum in quibusdam annis reperiri in veteri Calendario. — That in some years no mean Paschal full moon is found in the old Calendar. → 359

Paschalia Nouilunia quot, & quæ sint, ex decreto Concilij Nicæni. — How many the Paschal new moons are, and which, according to the decree of the Council of Nicaea. → 62

Paschale plenilunium ac Nouilunium, quo pacto per progressus Neomeniarum supputetur. — By what method the Paschal full moon and new moon is reckoned through the progressions of the new moons [Neomeniæ]. → 539

Paschale Plenilunium cuiusuis centesimi post correctionem quo pacto per Epactas correctas supputetur. — By what method the Paschal full moon of any centennial year after the correction is reckoned by the corrected epacts. → 553

Paschales Lunationes cur non omnes in nouo Calendario sint 29. dierum, vt in veteri. — Why not all the Paschal lunations in the new Calendar are of 29 days, as in the old. → 103

Paschales menses esse plenos, vt vult Vieta, non esse necessarium, immo Patribus Concilij Nicæni contrarium. — That the Paschal months be full, as Viète wishes, is not necessary — indeed it is contrary to the Fathers of the Council of Nicaea. → 515

Paschalis tabula, siue festorum mobilium antiqua reformata & perpetua. — The Paschal table, or the ancient, reformed, and perpetual table of movable feasts. → 33

Paschalis tabula, siue festorum mobilium noua reformata, & perpetua. — The Paschal table, or the new, reformed, and perpetual table of movable feasts. → 34

Paschata 125. ante Plenilunium medium, secundum priorem tabulam æquationis Vietæ. — 125 Easters before the mean full moon, according to Viète's earlier table of equation. → 521

Perfectio ac perpetuitas Calendarij Gregoriani in quo consistat. — In what the perfection and perpetuity of the Gregorian Calendar consists. → 73

Periodi anomalie æquinociorum Radix. — The radix of the period of the anomaly of the equinoxes. → 76

Periodum magnam Lunæ annorum 3400. non restituere accurate, vt putat Vieta, synodicos menses. — That the great period of the Moon of 3400 years does not, as Viète thinks, accurately restore the synodic months. → 528

Periodus anomalie æquinociorum quo anno Christi inceptura sit. — In what year of Christ the period of the anomaly of the equinoxes is to begin. → 76

Periodus Callippi annorum 76. — The period of Callippus, of 76 years. → 86

Perpetuitas, ac perfectio Calendarij Gregoriani in quo consistat. — In what the perpetuity and perfection of the Gregorian Calendar consists. → 73

Pij Papæ mart. decretum de Paschæ celebratione. — The decree of Pope Pius, martyr, concerning the celebration of Easter. → 55

Plenilunia ac Nouilunia in centesimis annis communibus, quo modo reperiantur ex tabula Nouiluniorum. — In what way the full moons and new moons in the common centennial years are found from the table of new moons. → 253

Plenilunia, Nouiluniaque qua ratione ex tabulis Epactarum inquirantur. — By what method the full moons and new moons are sought from the tables of epacts. → 171

Plenilunij ac Nouilunij inuentio post annum correctionis 1582. ex tabula Nouiluniorum. — The finding of the full moon and new moon after the year of the correction 1582, from the table of new moons. → 253

Plenilunij ac Nouilunij inuentio in quolibet mense ab anno 1501. vsque ad 1576. ex tabula Nouiluniorum. — The finding of the full moon and new moon in any month from the year 1501 up to 1576, from the table of new moons. → 253

Plenilunij ac Nouilunij inuentio in quolibet mense post annum 1576. vsque ad correctionem Gregorianam, ex tabula Nouiluniorum. — The finding of the full moon and new moon in any month after the year 1576 up to the Gregorian correction, from the table of new moons. → 253

Plenilunio, Nouilunioe quæsito ultra mensem propositum cadente, quid agendum. — What is to be done when the full moon or new moon sought falls beyond the month proposed. → 172

Plenilunium medium incidere in diem Paschæ ante Solis occasum, non censeri esse contra Canonem Concilij Nicæni. — That the mean full moon falling on the day of Easter before sunset is not judged to be against the Canon of the Council of Nicaea. → 502

Plenilunium aut Nouilunium cuiusuis mensis quo pacto ex Nouilunio plenilunioe Martij, vel Aprilis eruatur. — By what method the full moon or new moon of any month is drawn out from the new or full moon of March or April. → 535

Plenilunium cuiusuis centesimi Paschale post correctionem quo pacto per Epactas correctas supputetur. — By what method the Paschal full moon of any centennial year after the correction is reckoned by the corrected epacts. → 533

Plenilunium aut Nouilunium Paschale cuiusuis anni expansi quo pacto ex Nouilunio, plenilunioe centesimi anni proxime antecedentis eliciatur. — By what method the Paschal full moon or new moon of any expanded year is drawn out from the new or full moon of the immediately preceding centennial year. → 533

Plenilunium, ac Nouilunium Paschale quo pacto per progressus Neomeniarum supputetur. — By what method the Paschal full moon and new moon is reckoned through the progressions of the new moons. → 539

Plenilunium Paschale quando in Martium, & quando in Aprilem cadat. — When the Paschal full moon falls in March, and when in April. → 533

Plenus & cauus annus Lunaris tam communis, quam Embolismicus quid. — What the full and hollow lunar year is, both common and embolismic. → 85

Pontifices multi Romani, & Concilia non pauca correctionem calendarij desiderarunt. — Many Roman Popes, and not a few Councils, desired the correction of the calendar. → 1

Pontifices summi complures tentarunt errorem æquinotij & Lunæ xiiij. emendare. — Several supreme Pontiffs attempted to correct the error of the equinox and of Luna xiiij. → 3

Postpositio Lunæ quouis centesimo anno, quo pacta [recte: pacto] inueniatur. — By what method the postposition of the Moon in each centennial year is found. → 149

Primum mensem recte dici eum, cuius Luna xiiij. in diem æquinotij incidit, vel eum proxime sequitur. — That the first month is rightly said to be that whose Luna xiiij falls on the day of the equinox, or immediately follows it. → 61

Primus mensis non recte à nonnullis definitur. — The first month is not rightly defined by some. → 61

Primus mensis Iudæorum quis. — Which is the first month of the Jews. → 54

Progressus Neomeniarum à centuria ad centuriam, ex sententia Vietæ. — The progression of the new moons from century to century, according to Viète's opinion. → 529

Progressus verior Neomeniarum à centuria ad centuriam, post correctionem, quantus sit. — How great the truer progression of the new moons from century to century is, after the correction. → 529

Progressus Neomeniarum à centuria ad centuriam, ante correctionem, quantus sit. — How great the progression of the new moons from century to century is, before the correction. → 529

Progressus Nouiluniorum, ac pleniluniorum, quo pacto colligatur. — By what method the progression of the new moons and full moons is gathered. → 537

Prutenicæ tabulæ, quæ hodie ab omnibus vsurpantur, cur incertæ iudicari possint. — Why the Prutenic tables, which are today used by all, may be judged uncertain. → 67

Prutenicas tabulas ad Calendarium restituendum esse adhibitas. — That the Prutenic tables were employed for the restoration of the Calendar. → 81

Ptolemæi annus quot annos requirat, vt dies intercalaris omittatur. — How many years Ptolemy's year requires, that the intercalary day be omitted. → 71

Ptolemæo quantus sit annus. — How great the year is according to Ptolemy. → 70

R.

Radix æquationis Epactarum vbi statuenda. — Where the radix of the equation of the epacts is to be established. → 107

Radices festorum mobilium, quæ. — The radices of the movable feasts, which they are. → 577

Radix periodi anomalie æquinocriorum. — The radix of the period of the anomaly of the equinoxes. → 76

Regula tripartita continuandi tabulam æquationis Epactarum in infinitum, ex Lilijs sententia. — The threefold rule for continuing the table of the equation of the epacts to infinity, according to Lilius's opinion. → 131

Responsio generalis ad omnia argumenta, quæ contra æquationem æquinocitij afferri solent. — A general reply to all the arguments customarily brought against the equation of the equinox. → 84

Romani multi Pontifices, & Concilia non pauca Calendarij correctionem desiderarunt. — Many Roman Popes, and not a few Councils, desired the correction of the Calendar. → 1

S.

Saltus Lunæ, & Embolismi faciunt, vt nonnunquam duæ, vel tres Lunationes continuæ sint dierum 29. & duæ, tresue, vel quatuor, dierum 30. — The leap of the Moon and the embolisms bring it about that sometimes two or three continuous lunations are of 29 days, and two, three, or four of 30 days. → 341

Saltus Lunæ apud Computistas quid in annis Lunaribus communibus. — What the leap of the Moon is according to the computists in common lunar years. → 340

Saltum Lunæ quando dici possit fieri in anno Embolismico. — When the leap of the Moon may be said to occur in an embolismic year. → 340

Saltum Lunæ semper fieri, cum aureus numerus est j. alias nunquam, nisi in annis Embolismicis Epactarum xix. & xvij. — That the leap of the Moon always occurs when the golden number is j, and otherwise never, except in the embolismic years of epacts xix and xvij. → 341

Saltus Lunæ cur plerisque displiceat. — Why the leap of the Moon displeases most people. → 341

Scaligeri Lunas xiiij. aliquas nimis postponi. — That some of Scaliger's Lunæ xiiij are postponed too far. → 549

Scaligerum in æquatione Epactarum non habuisse semper rationem postpositionum Lunæ, ac dierum exemptorum. — That Scaliger, in the equation of the epacts, did not always take account of the postpositions of the Moon and of the days removed. → 544

Scaligerum sumpsisse Calendarium Compendij pro suo. — That Scaliger took the Calendar of the Compendium for his own. → 540

Scaliger quæ errata in suo Calendario commiserit. — What errors Scaliger committed in his Calendar. → 540

Sedem stabilem æquinotio posse in Calendario assignari, Lunaremque Cyclum perpetuum posse describi, cur plerique impossibile esse censuerint. — Why most people judged it impossible that a stable seat could be assigned to the equinox in the Calendar, and that a perpetual Lunar Cycle could be described. → 1

Sententiæ varicæ de æquinotij restitutione. — Various opinions concerning the restitution of the equinox. → 64

Similitudo inter intercalationem quadringentesimo quoque anno adhibendam, & intercalationem quarto quoque anno consuetam. — The likeness between the intercalation to be applied in every four-hundredth year, and the intercalation customary in every fourth year. → 74

Similitudo inter medias Luminarium coniunctiones, & æquationem ad annum medium institutam. — The likeness between the mean conjunctions of the Luminaries, and the equation established for the mean year. → 72

Solares, ac Lunares menses ad festa mobilia celebranda necessarij sunt. — Solar and lunar months are necessary for celebrating the movable feasts. → 1

Solares anni 19. quot dies contineant. — How many days 19 solar years contain. → 86

Solaris annus non est eiusdem semper magnitudinis. — The solar year is not always of the same magnitude. → 70

Solaris, atque Lunaris annus, cur corrigendus fuerit. — Why the solar and the lunar year had to be corrected. → 1

Solaris Cycli inuentio in Computo Ecclesiastico ex propria tabella. — The finding of the Solar Cycle in the Ecclesiastical Computus from its own little table. → 591

Solaris Cycli inuentio per Arithmetica. — The finding of the Solar Cycle by arithmetic. → 23

Solaris Cycli inuentio per tabulam, quocunque anno proposito. — The finding of the Solar Cycle by a table, for any year proposed. → 23

Solaris cycli inuentio in digitis memoriter. — The finding of the solar cycle on the fingers, from memory. → 570

Solaris cycli inuentio ex tabella, quæ incipit ab anno correctionis 1582. — The finding of the solar cycle from a little table that begins with the year of the correction 1582. → 22

Solaris Cyclus quid. — What the Solar Cycle is. → 361

Solaris Cyclus idem, qui literarum Dominicalium. — The Solar Cycle is the same as that of the Dominical letters. → 361

Solaris Cyclus, seu literarum Dominicalium antiquus annorum 28. perpetuus, cum tabula æquationis eiusdem Cycli. — The Solar Cycle, or the ancient perpetual [cycle] of the Dominical letters, of 28 years, with the table of equation of the same Cycle. → 27

Solarium tantum mensium vsus ad festa immobilia celebranda necessarius est. — The use of solar months alone is necessary for celebrating the immovable feasts. → 1

Solis locus in zodiaco, quo pacto memoriter inueniatur. — By what method the place of the Sun in the zodiac is found from memory. → 583

Supputatio Lunationum vsque ad Quartā. — The reckoning of the lunations up to the Quarta. → 552

Supputatio Nouiluniorum, ac Pleniluniorum mediorum. — The reckoning of the mean new moons and full moons. → 168

T.

Tabula Paschalis, siue festorum mobilium antiqua reformata, & perpetua. — The Paschal table, or the ancient, reformed, and perpetual table of movable feasts. → 33

Tabula Nouiluniorum pro 76. annis ab anno 1501. inclusiue vsque ad annum 1576. inclusiue, qui constituunt vnam periodum Callippi. — The table of new moons for the 76 years from the year 1501 inclusive up to the year 1576 inclusive, which make up one period of Callippus. → 176

Tabula æquationis Epactarum capituli 11. continetur Cyclo 300000. annorum. — The table of the equation of the epacts of chapter 11 is contained within a Cycle of 300,000 years. → 133

Tabula Epactarum expansa, vna cum tabula æquationis ex mente Liliij, nec non cum diebus propter æquinoclij æquationem exemptis. — The expanded table of epacts, together with the table of equation according to Lilius's intention, and also with the days removed on account of the equation of the equinox. → 110

Tabula ad supputanda Nouilunia, Pleniluniaque ad annum vsque 1000000000. — The table for reckoning the new moons and full moons up to the year 1,000,000,000. → 174

Tabula anticipationis Lunæ in annis per 76. progredientibus. — The table of the anticipation of the Moon in years advancing by 76. → 176

Tabula reuolutionum Nouiluniorum ad plurimos annos supputata. — The table of revolutions of the new moons, reckoned for very many years. → 173

Tabula festorum mobilium temporaria ab anno 1600. vsque ad annum 5000. — The temporary table of movable feasts from the year 1600 up to the year 5000. → 380

Tabula æquationis Epactarum qua ratione instauranda sit, si forte alia anni magnitudo à posteris deprehendatur. — By what method the table of the equation of the epacts is to be renewed, if perhaps another magnitude of the year should be discovered by posterity. → 166

Tabula æquationis Epactarum, qua ratione instauranda sit, si forte Luna aliter æquanda sit, quam supra declaratum est. — By what method the table of the

equation of the epacts is to be renewed, if perhaps the Moon should have to be equated otherwise than was declared above. → 166

Tabellæ temporariæ ad inuestigandas Epactas, quo pacto construantur. — By what method the temporary little tables for investigating the epacts are constructed. → 159

Tabellæ temporariæ Cycli Solaris. — The temporary little tables of the Solar Cycle. → 364

Tabula Nouiluniorum perpetua. — The perpetual table of new moons. → 344

Tabulæ Epactarum expansæ constructio. — The construction of the expanded table of epacts. → 105

Tabellæ temporariæ literarum Dominicalium constructio ad quodcunque seculum propositum. — The construction of the temporary little table of Dominical letters for any century proposed. → 26

Tabula æquationis Epactarum capituli 11. Compendium, vna cum eius vsu. — A compendium of the table of the equation of the epacts of chapter 11, together with its use. → 144

Tabula æquationis Epactarum accuratior constructio, quam cap. 11. factum est. — A more accurate construction of the table of the equation of the epacts than was done in chapter 11. → 154

Tabula Epactarum annorum, ac mensium. — The table of epacts of years and of months. → 169

Tabula æquationis Epactarum constructio. — The construction of the table of the equation of the epacts. → 106

Tabulæ 30. amplectentes omnes Lunationes triginta Cyclorum tabulæ expansæ. — The 30 tables embracing all the lunations of the thirty Cycles of the expanded table. → 304

Tabellæ temporariæ literarum Dominicalium. — The temporary little tables of the Dominical letters. → 369

Tabula Paschalis, siue festorum mobilium noua reformata, & perpetua. — The Paschal table, or the new, reformed, and perpetual table of movable feasts. → 34

Tabula Lunationum aureorum numerorum in veteri Calendario descriptorum. — The table of the lunations of the golden numbers described in the old Calendar. → 342

Tabulæ Prutenicæ, quæ hodie ab omnibus vsurpantur, cur incertæ iudicari possint. — Why the Prutenic tables, which are today used by all, may be judged uncertain. → 67

Tabularum Astronomicarū inconstantia vnde proueniat. — Whence the inconstancy of the Astronomical tables arises. → 67

Tabularum Astronomicarum inconstantiam non obesse perfectioni, ac perpetuitati Calendarij. — That the inconstancy of the Astronomical tables does not stand in the way of the perfection and perpetuity of the Calendar. → 81

Tabulas Astronomicas magni faciendas esse etiamsi longo tempore durare nequeant. — That the Astronomical tables are to be highly valued, even if they cannot last for a long time. → 67

Tabulas medij motus Lunæ vtilis esse ad examinandum Cyclum quemcunque propositum. — That the tables of the mean motion of the Moon are useful for examining any Cycle proposed. → 347

Tabulas Prutenicas ad Calendarium restituendum esse adhibitas. — That the Prutenic tables were employed for the restoration of the Calendar. → 81

Traditionem esse Apostolicam de celebrando Paschate die Dominica post Lunam xiiij. primi mensis. — That it is an Apostolic tradition to celebrate Easter on the Sunday after Luna xiiij of the first month. → 56

Tropicus annus quando sit maximus, quando minimus, & quando mediocris. — When the tropical year is greatest, when least, and when middling. → 76

V.

Verno æquinotio dies 21. Martij à Concilio Nicæno tributus est. — The 21st of March was assigned to the vernal equinox by the Council of Nicaea. → 62

Verum æquinotium prolapsurum ad diem 27. Martij, quare quidam Astronomus opinatus sit. — Why a certain Astronomer supposed that the true equinox would slip forward to the 27th of March. → 80

Victoris Papæ Mart. decretum de Paschate celebrando post Lunam xiiij. primi mensis. — The decree of Pope Victor, martyr, concerning the celebration of Easter after Luna xiiij of the first month. → 55

Vietæ propter quam causam cogatur toties constituere Lunarem mensem dierum 28. & interdum dierum duntaxat 27. — For what reason Viète is compelled so often to set up a lunar month of 28 days, and sometimes of only 27 days. → 512

Vietæ Calendarij inscriptio. — The title of Viète's Calendar. → 505

Vietam comminisci nouam Epactarum collocationem, nouumque anni principium. — That Viète contrives a new placement of the epacts, and a new beginning of the year. → 506

Vietæ κριτικὰ [Greek: kritika, "critical objections"] aduersus Calendarium Gregorianum, eorumque solutiones. — Viète's critical objections against the Gregorian Calendar, and their solutions. → 515

Vietæ audax facinus in Calendario suo seorsum excudendo, cum bulla Gregorij. — Viète's bold deed in printing his own Calendar separately, [set] with the bull of Gregory. → 510

Vietam secundum priorem tabulam æquationis celebrare Pascha non raro in secundo mense. — That Viète, following the earlier table of equation, not rarely celebrates Easter in the second month. → 524

Vietam, velit, nolit, facere interdum Lunationem dierum 31. in anno bissextili. — That Viète, willy-nilly, sometimes makes a lunation of 31 days in a bissextile year. → 512

Vietam infringere regulam vulgarem inuestigandi ætatem Lunæ per Epactas. — That Viète breaks the common rule for investigating the age of the Moon by the epacts. → 510

Vietæ Epactas vere non esse Epactas. — That Viète's epacts are truly not epacts. → 510

Vietæ Epactas non esse æquales diebus, qui in Decembri post vltimam Lunationem supersunt. — That Viète's epacts are not equal to the days that remain in December after the last lunation. → 511

Vietam duas tabulas æquationis Epactarum proponere inter se contrarias. — That Viète sets forth two tables of the equation of the epacts contrary to each other. → 519

Vietam secundum priorem tabulam æquationis exhibere Paschata ante Plenilunium medium. — That Viète, following the earlier table of equation, presents Easters before the mean full moon. → 521

Vietam secundum posteriorem tabulam æquationis sæpius in mense vltimo Pascha celebrare. — That Viète, following the later table of equation, more often celebrates Easter in the last month. → 525

Vietam sæpissime exhibere Lunas xv. ante tempus legitimum. — That Viète very often presents Lunæ xv before the lawful time. → 527

Vietam non paucas Lunas xiiij. plus æquo, postponere. — That Viète postpones not a few Lunæ xiiij more than is fair. → 528

Vietam nonnunquam vel constituere duo Nouilunia proxima, nullo intercedente die, vel nullum habere in vno anno Nouilunium Paschale, vniue Lunationi dies 31. tribuere. — That Viète sometimes either sets two new moons next to each other, with no day intervening, or has no Paschal new moon in one year, and assigns 31 days to a single lunation. → 513

Vietam interdum vel constituere Lunationem duorum tantum dierum, vel 32. nullumque habere in vno anno Nouilunium Paschale. — That Viète at times either sets up a lunation of only two days, or of 32, and has no Paschal new moon in one year. → 514

Vietam non semper addere 11. vt Epacta sequens formetur, etiamsi neque aureus numerus sit 19. neque alia litera æquationis accipienda sit: contra omnium Computistarum doctrinam. — That Viète does not always add 11 to form the following epact, even when the golden number is not 19 and no other letter of equation is to be taken: against the teaching of all the computists. → 514

Vietam temere sex dies anni Nouilunio priuare. — That Viète rashly deprives the year of six days of new moon. → 514

Vsus æquationis Epactarum secundum Aloysium Liliū instituta. — The use of the equation of the epacts as instituted by Aloysius Lilius. → 10

FINIS.

Apology for the New Roman Calendar (Novi Calendarii Romani Apologia)

[Title page]

Verbatim transcription:

NOVI CALENDARII ROMANI APOLOGIA, *Aduersus Michaelē
Mæstlinum Gæppingensem, in Tubingensi Academia Mathematicum,*
**DVOBVS LIBRIS EXPLICATA, AVCTORE CHRISTOPHORO CLAVIO
BAMBERGENSI E SOCIETATE IESV.**

[IHS device]

MOGVNTIÆ, Sumptibus ANTONII HIERAT, excudebat JOANNES
ALBINVS. *Cum Gratia & Priuilegio Sacræ Cæsar. Maiest.* ANNO M.DC.XII.

Translation:

A DEFENCE OF THE NEW ROMAN CALENDAR, against Michael Mästlin of
Göppingen, mathematician in the University of Tübingen, set out in two books, by
the author **Christoph Clavius of Bamberg, of the Society of Jesus**.

Mainz, at the expense of Antonius Hierat, printed by Joannes Albinus. With the
grace and privilege of His Sacred Imperial Majesty. In the year 1612.

Diagram. The Jesuit printer's device at the center of the title page: an oval
sunburst medallion enclosing the Christogram **IHS** surmounted by a cross, with
three nails below, flanked and crowned by cherub figures and foliate scrollwork.
The legend runs around the oval frame.

- Around the oval (upper half): **NOMEN DOMINI** ("the name of the Lord")
- Around the oval (lower half): **LAVDABILE** ("praiseworthy") — together
"Laudabile nomen Domini" ("Praiseworthy is the name of the Lord," Psalm
112/113:3)
- Center: **IHS** with a cross rising from the crossbar of the H, and three nails
beneath

[Printer to the Reader]

TYPOGRAPHVS LECTORI. (The Printer to the Reader.)

The man who had devoted the greatest toil and labor to composing the new
Roman Calendar was the very same one who labored, almost alone, in defending
it: Christoph Clavius [Christophorus Clavius]. And first of all, when Michael
Mästlin [Michael Mästlin] had rushed to attack it before nearly all others, Clavius
checked his assault with this very Apology. Then, when many others pressed on
to attack the manifest truth — some driven by the same religious hatred as
Maestlin, others thinking their own reputation for talent to be at risk if they
should admit that anything had been done well and successfully by others — he
judged that this defense must be furnished with a greater apparatus. And so he

brought out, in a second work, the *Exposition of the Roman Calendar restored by Gregory XIII* [*Romani Calendarii a Gregorio XIII. restituti Explicationem*], into which he transferred much from this Apology and added so much more that scarcely anything further could be desired, and we would seem to be doing nothing worthwhile were we to submit that earlier Apology to the press once again.

Yet, lest anything from the writings of so learned a man should perish, we made it a matter of conscience not to omit even the least thing. Only those thirty Calendars of the golden numbers — laid out in thirty lines of a table corresponding to the Epacts [Epactarum] — and an equal number of the Lunations of the Cycles [Cyclorum Lunationes], we did not think need be repeated, since they already appear in that fuller exposition of the Calendar and so could be absent here without any inconvenience. We have also separated the one book from the other, so that a reader may use whichever he wishes on its own: for either of them is fully sufficient to master the doctrine that concerns the Calendar. And of this matter we wished to advise the reader.

APOLOGY FOR THE NEW CALENDAR

AGAINST MICHAEL MAESTLIN [Michael Mästlin], mathematician of Tübingen.

BOOK ONE (LIBER PRIMVS).

PREFACE (PRÆFATIO).

What the Ecumenical Councils desired with their fullest prayers, and what all mathematicians and all good men have always longed for — that the Roman Calendar be recalled from the errors into which it had slipped, over the long course of time, on account of the unequal motions of the Sun and Moon — this, in recent years, was brought to completion and perfection, with God's help, by Gregory XIII [Gregory XIII], Supreme Pontiff, after he had consulted by letter the princes of the whole Christian world and had engaged the most expert mathematicians. And when this achievement had been approved and praised — by Rudolf II [Rudolf II], ever-august Emperor of the Romans, by the kings and Christian princes, by the commonwealths, and by the foremost universities — with a wonderful and almost incredible agreement of will and zeal, it was thereafter confirmed by laws, so that it might be observed devoutly by all.

In these very days there has come forward one Michael Mästlin, some fellow of Göppingen, a mathematician in the University of Tübingen, who, swollen with an

arrogance more than heretical, not only holds as nothing and despises this deed of the Pontiff — a deed worthy of remembrance — just as he does all the other precepts and laws of all the Pontiffs (which has always been the mark of every heretic), but also, in a treatise long and wordy enough, attempts to overturn the correction of the Calendar from its very foundations. And this he does with such headlong and reckless audacity that, like a second Ishmael [Ismael] whose hand is against all men, he rushes wantonly upon the Pontiff himself, Christ's Vicar, upon all mathematicians, and upon the consensus of all the faithful.

He had indeed earlier published, as he asserts, another treatise written in the German language, which has not yet come into my hands; but because he saw that it had not had strength enough to remove the Calendar from the scene — as he wished — inasmuch as not only all Catholics but also most heretics, drawn by its excellence and truth, had adopted it, he added this second one, by which he truly supposes that he has won a victory over the Calendar and has imposed silence upon all those who have hitherto approved it, and who, by their encouragement and counsel among princes and magistrates, have been its champions for having it received by all. But so that everyone may see how arrogantly and insolently, in this latter treatise, this hundredfold Briareus [Briareus] declares war not only on the new Calendar and on the heavens, but also challenges to battle all the mathematicians there are in every nation whatsoever — I have judged it not out of place to insert here, word for word, his inflated title, which runs as follows.

[Reproduced title of Maestlin's work, set as the display heading of the page:]

**A SECOND EXAMINATION OF THE NEW PONTIFICAL GREGORIAN
CALENDAR, IN WHICH IT IS DEMONSTRATED FROM THE VERY
SOURCES** that the new Calendar, in all those parts by which it either is,
or is thought to be, most correctly reformed, is in many ways faulty, and
defective in its very foundations.

[Margin: The insolent title of Maestlin's examination.]

By whose warrant does he so boldly challenge all the mathematicians — both those who first constructed that new Calendar and those who have defended it up to now — [demanding] that, unless they wish to be reckoned impostors and disturbers of the public peace within the Holy Roman Empire, they answer this examination; or, if they cannot answer, that they frankly admit, for the common welfare of our country, that they praised this Calendar with too rash an applause and premature counsel, and everywhere persuaded people to adopt it?

This is the boasting talk of that vaunted soldier, by which he has quite convinced himself that no one would dare to reply to his examination. For my own part, I judge that no one has so far been willing to answer that examination — whether because of the obscurity of its author or because of its patent slanders and follies (I make my guess from myself).

[Margin: Why no answer was made sooner to Maestlin's examination.]

For they supposed that no one would be so foolish, so silly, so blind, that with him the loquacity of a single man could prevail against the authority of the Supreme Pontiff, of the Roman Emperor, and of the Christian kings, and against the consensus of the Catholic world. And of what man are we speaking? Of one, forsooth, who has emerged out of a corner of Germany, Göppingen, out of the lurking-places of ignorance — unknown to all — and who seeks fame and celebrity of name from the overthrow of the Roman Calendar, just as that man of old sought it from the ruin of the Ephesian Diana. Indeed, though I was often urged by men of the greatest gravity to answer, this very consideration made me the slower both to undertake the task and to carry it through. But at last, when I had learned from friends' letters that this man was raging most insolently at the disdain of so ignoble a contest, as though it were a concession of victory, and that the minds of certain over-credulous people were beginning little by little to waver, I resolved not to shrink from this contest, whatever its nature.

I therefore — being one of those to whom the business of correcting the old Calendar was entrusted, small as I am — will engage with this Goliath for the honor of the Church, like a second David, relying on divine help rather than on my own strength. For who is this uncircumcised Philistine who has defied the army of the living God? And so, by this Apology, I will do what lies in me (since he challenges me along with the others) to make everyone understand that we are not impostors, nor disturbers of the peace, but that with prudent and necessary counsel we removed errors from the Calendar; whereas he has neither understood wherein the correction of the Calendar consists, nor rightly attacked it now that it is restored and amended, but has in many places wrested it, with a wicked and unjust mind, to an alien sense, so as the more easily to impose upon the world and to stir up the ignorant and unskilled against the new Calendar — as though it were crammed with countless faults and errors — and at the same time against the Supreme Pontiff, its author. I will pass over in silence the impious cries of this whirlwind of the church against the authority of the Roman Pontiff; for it has always been the mark of all heretics, ancient and recent alike, to withdraw themselves from obedience to the head of the Church — that the head

is the Roman Pontiff, an almost countless number of Doctors have demonstrated, more clearly than daylight, from the Councils and the Fathers. I will only examine, as best I can, this examination by the corrector of all the nations, so that its true character may at last be discerned.

For the rest, I beg and beseech those who are going to read this volume, that if at any time I answer that man in the manner he has provoked, they should not think me forgetful of modesty or of myself; but let them remember that so great an audacity in a heretic, insolently insulting the pontifical majesty, was not to be received gently and mildly. For as the ignorance of one who errs must be taught, so the audacity of one who rages must be broken. We see that St. Jerome and the other holy Fathers did just this very thing, when they beat back the impudence of heretics with sharp and vehement speech — lest, of course, the leniency of Catholics should feed and increase the insolence of heretics, if those most arrogant men should interpret restraint as fear. Therefore no one will be so unjust a judge of things as not to think that in the same cause the same is permitted to me as well: especially since this new Goliath cannot be conquered and laid low unless the outstretched and hardened brow of that most audacious man be repeatedly struck. Yet we shall do this with moderation, so that he too may understand that we wished to draw not so much blood as a blush.

Now, so that this reply of mine may be neither unprofitable to its readers nor difficult for all to grasp, there will need to be explained in it whatever shall seem serviceable to the business of correcting the Calendar — and among other things, why it needed to be amended, and wherein its restoration consists. For thus it will come about, I think, that not only will Maestlin's slanders be answered most fully, but silence will also be imposed on all others who are sometimes wont to disapprove of this new Calendar (for no other reason, I judge, than that the grounds of the correction have not been clearly seen and understood by them); while those who have long been eager to learn more diligently the reasoning of the new Calendar may at last have something from which to seek a fuller understanding of it. All the foundations of the restored Calendar are indeed most amply set out in the book on the new method of restoring the Roman Calendar; but since that book has not yet come to light — partly on account of the untimely death of Gregory XIII, of happy memory, partly on account of other impediments that have variously arisen — it has seemed good to set forth in this reply, with the greatest possible brevity, those things without which Maestlin's cavils cannot be fully answered.

[Margin: The division of this work into two books.]

The whole Apology we shall distribute into two books. In the first, everything that pertains to the Equinox will be explained. The second will contain the cycle of Epacts and of the Dominical Letters, and will most clearly demonstrate that the Epacts are rightly arranged in the Calendar for the celebration of Easter at its due time.

Chapter 1 — What Scripture prescribes concerning the celebration of Easter, and what has been sanctioned about it by the holy Fathers and by the Councils

[Margin: The precept concerning the celebration of Easter, from Sacred Scripture.]

At the outset, then, that we may begin from certain and agreed points: in Exodus, chapter xii, the Phase, or Passover, is prescribed to the Hebrews in these words. *"The Lord also said to Moses and Aaron in the land of Egypt: This month shall be to you the beginning of months; it shall be the first in the months of the year. Speak to the whole assembly of the children of Israel, and say to them: On the tenth day of this month let every one take a lamb by their families and houses."* And a little further on: *"And you shall keep it until the fourteenth day of this month; and the whole multitude of the children of Israel shall sacrifice it in the evening."* And after a few words: *"For it is the Phase (that is, the Passing) of the Lord."* And further on: *"And you shall have this day for a memorial, and you shall keep it a feast to the Lord in your generations with an everlasting observance."* And a little after: *"In the first month, on the fourteenth day of the month, in the evening, you shall eat unleavened bread until the one-and-twentieth day of the same month."* Next, in Leviticus, chapter XXIII: *"These, then, are the holy feasts of the Lord, which you must celebrate in their seasons. In the first month, on the fourteenth day of the month, in the evening, is the Phase of the Lord; and on the fifteenth day of this month is the solemnity of the unleavened bread of the Lord."* Likewise in Numbers, chapter IX: *"The Lord spoke to Moses in the desert of Sinai, in the second year after they had gone out of the land of Egypt, in the first month, saying: Let the children of Israel keep the Phase in its due time, on the fourteenth day of this month, in the evening, according to all its ceremonies and justifications."* And somewhat later: *"The Lord spoke to Moses, saying: Speak to the children of Israel: The man that shall be unclean by occasion of one that is dead, or shall be in a journey afar off in your nation, let him keep the Phase to the Lord in the second month, on the fourteenth day of the month, in the evening."* In Numbers, chapter XXVIII too, these words are found: *"But in the first month, on the fourteenth day of the month, shall*

be the Phase of the Lord, and on the fifteenth day the solemnity." From all these passages it is clear that it was prescribed by God to the Hebrews that they should celebrate the Phase, or Passover, on the fourteenth day of the first month, in the evening.

[Margin: When the Jews celebrated Passover by divine command. / Which is the first month.]

Now this month is a lunar one — for the Hebrews used lunar months — namely the one whose fourteenth day of the Moon (counting also the very day of the new moon, or neomenia) falls either on the day of the vernal equinox or first occurs after the equinox. This is gathered without obscurity from the older and more learned Hebrews, who always taught that Passover was to be celebrated, according to the lunar cycle, on the fourteenth Moon falling on the equinox or next following it. The most amply attested witness of this matter is Josephus the Jew, in Book III of the *Antiquities of the Jews*, chapter XIII, who writes thus: *"In the month called Xanthicus — which among us is named Nisan, and is the beginning of the year — on the fourteenth Moon, with the Sun opposite in Aries, in which month we were delivered from the servitude of the Egyptians, He commanded us to sacrifice year by year the offering which they made at that time when they went out of Egypt (this is called the Passover); and we do indeed celebrate it throughout our tribes, keeping nothing of what is sacrificed until the morrow."* By these words he plainly teaches that the fourteenth Moon of the first month, on which the Jews celebrated Passover, was the one that either falls on the day of the equinox or next follows the equinox — that is, when the Sun is either at the beginning of Aries or in some degree of Aries.

That Philo, the most learned of the Jews, and other more ancient Jews held the same view, Anatolius — bishop of Laodicea, a city of Syria, who flourished about the year of the Lord 280, some 45 years before the Council of Nicaea — teaches in the clearest words. After he had taught (as Eusebius reports, Book VII of the *Ecclesiastical History*, chapter XXIX) that the year, as far as concerns the celebration of Easter, ought to be begun from the vernal equinox, he adds this: *"And therefore we say that those men offend not a little who think that Passover is to be celebrated before the beginning of this new year (that is, before the vernal equinox). Nor does this reckoning first take its beginning from us, but it is shown to have been approved by the ancient Jews and observed before the coming of Christ — as Philo and Josephus clearly teach, and, older than they, Agathobulus, and, taught by him, Aristobulus of Paneas, who was one of those seventy elders sent by the high priests to Ptolemy, king of Egypt, to translate the books of the Hebrews into the*

Greek tongue; and who answered the King on many points from the traditions of Moses when he proposed and inquired of them. These men, therefore, when they were expounding the questions of Exodus, said that the Passover was not to be sacrificed before the vernal equinox had passed. But Aristobulus added this further: that on the day of Passover it must be observed not only that the Sun cross the vernal equinox, but the Moon also. For since there are two equinoxes, of Spring and of Autumn, separated by equal intervals, and since the solemnity of the fourteenth of the first month is appointed after the evening, when the Moon is found opposite the Sun on the far side — as one may also prove with the eyes — the Sun is found holding the part of the vernal equinox, and the Moon, on the contrary, that of the autumnal. I have read in their books, and in others, many things set forth on these most powerful assertions, which clearly show that the solemnity of Passover is in every way to be celebrated after the equinox." These things Eusebius reports from Anatolius.

From all this it is clear that the more ancient and skilled Hebrews took [from the tradition of Moses] that fourteenth Moon of the first month which either falls on the equinox or next follows it; whereas the fourteenth Moon preceding the equinox was always rejected as useless, and as belonging rather to the last month of the year than to the first. And these things were sanctioned in the sacred and divine Scripture, and by the Hebrew teachers, concerning the Mosaic Passover.

Now, in the time of grace, after the Mosaic Law, the Catholic Church — although it was not bound by those ceremonial precepts, since all the legal observances ceased through the death and resurrection of Jesus Christ, as the holy Doctors agree — nevertheless willed that the Christian Passover [Easter], of which the Jewish one was the figure and shadow, should likewise be variable and movable, not fixed and stationary; and that in celebrating it the Church should observe the same things as the Hebrews, that is, the vernal equinox and the fourteenth Moon

[Margin: Why the Church preferred Easter to be movable rather than fixed.]

of the first month — on account of the sacrament and the hidden mysteries that are contained in this manner of celebrating the Easter of the Lord's resurrection, as is amply written by St. Augustine in his book *To the Inquiries of Januarius*, book II, chapters I and II. Therefore those are not to be heeded who think that the Church ought to celebrate the solemnity of Easter always on a fixed day, after the manner of the other festivals that are called fixed, with no consideration had of the Moon of the first month — being led chiefly by this reasoning, that the Church might wholly free and disentangle herself from the difficulties and controversies that are wont to arise among writers over the Paschal new moons. They are not, I

say, to be heeded (although the Church, using her own right, could freely do this, and no one could reprehend her for it, since that precept of the Passover is ceremonial and has now ceased, as has been said), because the Catholic Church has never celebrated Passover by that rite, but has always, in celebrating it, observed the motion of the Moon and of the Sun; and so it was sanctioned by the most ancient and most holy Roman Pontiffs, confirmed too by the first Council of Nicaea and very many others, as we shall soon say. For this reason a custom so venerable seems in no way to be broken without some grave cause.

[Margin: That the Christian Easter is to be celebrated on the first Sunday after the fourteenth Moon of the first month, so that a fourteenth Moon falling on a Sunday is transferred to the following Sunday.]

In this, however, the Church departed from the manner of the Jews: that she ordered Passover to be celebrated not on the fourteenth Moon of the first month itself, as the Hebrews did, but on the Sunday which next follows the fourteenth Moon of the first month — because it was on the first Sunday after the Jews' Passover that the Lord rose from the dead. Hence, just as the Jews celebrate Passover on the fourteenth [Moon] on account of the sacrificing of the lamb, which prefigured the death of Christ, so we celebrate at Easter the memory of Christ's resurrection, which took place on the Lord's Day. Nevertheless, whenever the fourteenth day of the Moon of the first month falls on a Sunday, [the Church] commands that the solemnity of Easter be transferred to the following Sunday — which, of course, falls on the sixteenth Moon of the first month. Two chief reasons for this are given by the Fathers and writers. First, that the Lenten fast should not be broken on the fourteenth Moon; or (if it be not then broken, but on the fourteenth Moon, as the ancient Fathers wished) lest we be compelled to fast on the Lord's Day together with the Manichaeian heretics, and the Paschal feasts should begin on the following day. But that it was not permitted to break the fast before the fourteenth Moon of the first month is plainly established from Eusebius, Book V of the *Ecclesiastical History*, chapter XXIII, where he says thus:

"In the provinces of Asia no small question arose, descending, as it were, from an ancient observance of theirs, in that they thought Passover must by all means be celebrated on the fourteenth Moon — namely when the lamb is commanded to be sacrificed by the Jews — affirming, as though of necessity, that on whatever day of the week the fourteenth Moon should come, the fast ought to be broken, since such a custom had never at all been observed in any other churches whatsoever." The same is taught by Blessed Ambrose in his Epistle to the Bishops established throughout Aemilia, in these words: *"Hence if it should fall out, as it will shortly,*

that the fourteenth Moon of the first month is on a Sunday — since we ought neither to fast on the Lord's Day, nor to break the fast on the thirteenth Moon when it falls on a Saturday (which above all ought to be kept on the day of the Passion) — the celebration of Easter must be deferred to the following week." The venerable Bede too, in his book *On the Reckoning of Time*, chapter LVII, writes thus on the same matter: *"It is therefore fitting to observe carefully that, as often as the fourteenth Moon falls on a Sunday, we should rather defer the Paschal day to the following week, for a twofold reason. First, that we should not break the fast when the thirteenth Moon is found on a Saturday, which is not consistent, since the law itself does not command it. Next, that we should not be compelled to fast on the Sunday on which the fourteenth Moon is set, thereby doing an unseemly and unlawful thing; for this custom the sect of the Manichaeans has held. And so on. Then, that we should never celebrate Passover with the Jews, nor agree with the Quartodeciman heretics,"* who taught that the Mosaic Law was to be observed together with the Gospel.

That Passover, moreover, is to be celebrated on a Sunday — and that the first one after the fourteenth Moon of the first month, that is, after the Passover of the Jews — can be confirmed by many authorities of the holy Fathers and by the decrees of Councils. That it must first of all not be celebrated on the fourteenth Moon with the Jews, but on the Lord's Day, was established by St. Pius, Pope and martyr, tenth from Blessed Peter, about the year of the Lord CL, in a decretal Epistle, in these words, as it is found in *De Consecratione*, Distinction 3, chapter *Nosse*: *"We wish you to know that the Lord's Passover is to be celebrated on the Lord's Day at its yearly seasons."* And a little after: *"Whence we too by Apostolic authority have ordained that all should observe the same, since we ourselves observe it too; nor ought you in any way to depart from the head."*

[Margin: The decree of St. Pius the Pope on celebrating Easter on Sunday.]

And St. Victor, Pope likewise and martyr, fourteenth from Blessed Peter, about the year of the Lord CXC, in his Epistle to Theophilus, bishop of Caesarea — which is found in *De Consecratione*, Distinction III, chapter *Celebritatem* — decrees that Passover ought to be celebrated not on just any Sunday, but on the one that follows the fourteenth Moon of the first month, writing thus: *"That the celebration of the holy Passover ought to be held on a Sunday, our predecessors have already decreed, and we command that it be solemnly celebrated on the same day; for it is not fitting that the members should differ from the head, or act otherwise. And let the same festival be celebrated from the fourteenth Moon of the first month up to the twenty-first of the same month."*

[Margin: The decree of St. Victor the Pope on celebrating Easter on the Sunday after the fourteenth Moon of the first month.]

Besides this, the same has been confirmed and sanctioned by various Councils. For in the first Council after the Apostles — which was held at the exhortation of St. Victor, the Supreme Pontiff whom we have just mentioned, at Caesarea in Palestine, by several bishops, over whom presided Theophilus, bishop of that city, Narcissus, bishop of Jerusalem, and Cassius, bishop of the church of Tyre — we read, in Eusebius, Book V of the *Ecclesiastical History*, chapter XXII, that it was thus decreed: *"Assemblies of bishops and councils are convened throughout each several province, and by letters prolonged and sent to one another about each and every place, they all confirm one ecclesiastical doctrine: that it be not permitted at any time, save on the Lord's Day — on which the Lord rose from the dead — to celebrate the Lord's Paschal mystery, and that only on this day is the Paschal fast to be broken."* Concerning this decree, the same Theophilus, in a Synodal epistle where he explains more clearly that Passover is to be celebrated on the Sunday after the fourteenth Moon, writes thus: *"It was established in that Synod that Easter should be observed from the 11th day before the Kalends of April up to the 12th day before the Kalends of May, and that no one has the liberty to overstep these limits either before or after. Likewise let the divine precept concerning the Moon be kept: 'Let the command given through Moses be observed by you, from the fourteenth Moon up to the twenty-first.' It is agreed, therefore, that these seven Moons were consecrated for Easter by being kept in like manner. When, therefore, a Sunday falls within that limit — from the 11th before the Kalends of April up to the 12th before the Kalends of May — and a Moon from among those seven hallowed ones, it befits us to observe Easter, as is right, in Christ Jesus the Lord"*

[Margin: The decree of the Council of Caesarea in Palestine on celebrating Easter after the fourteenth Moon of the first month.]

our Lord. From this arrangement it is plain that in that period Easter was regularly celebrated from 22 March through to 20 April. Later, however, five further days were added to this span, because the first month necessarily required it, so that Easter could be celebrated as late as 25 April inclusive. For the first month is not the one in which the Sun runs through the whole of Aries — as the Fathers at the Council of Caesarea seem to have wished — but the one whose 14th Moon [Luna xiiii] falls on some day from 21 March inclusive, on which the equinox occurs, up to 18 April inclusive. From this it follows that Easter can be celebrated on 25 April, as we shall say shortly.

Next, at that most famous Council of Nicaea, of 318 bishops distinguished for their holiness and innocence of life — with the legates of the Apostolic See present, sent there by Pope St. Sylvester [Sylvester I], and with Constantine the Great, at whose expense it was held — the same thing was decreed by solemn rite, or rather confirmed and renewed by the common consent of all. On this matter these words survive in the letter sent by that same Council to the Church of Alexandria and to the brethren dwelling in Egypt, Libya, and the Pentapolis, as Socrates [Socrates Scholasticus] reports in Book 1 of his *Ecclesiastical History*, chapter 6, and Theodoret in Book 1 of his *Ecclesiastical History*, chapter 9: [Margin: The Council's letter on the celebration of Easter.] "As for the general agreement concerning the celebration of the most sacred feast of Easter, know that by your prayers the controversy raised on this matter has been prudently and suitably settled, so that all the brethren who dwell in the East, and who previously used to imitate the custom of the Jews in observing this feast, will now, with united minds, henceforth diligently follow the Romans, ourselves, and all of you who from the earliest times have kept the same practice as we do in observing it." The Emperor Constantine the Great himself also wrote an elegant letter on the same subject to the churches, which is likewise preserved by the same writers at the places cited.

Finally, the same was afterwards established and enjoined under pain of anathema at the Council of Antioch and at the Council of Chalcedon of 630 bishops — held under Leo the Great [Leo I] — and at most other councils. [Margin: The decree of the Council of Nicaea on the celebration of Easter confirmed by the Council of Antioch, the Council of Chalcedon, etc.]

Although those words of the Council of Nicaea do not expressly state on what day the most holy Easter is to be celebrated — they seem only to indicate that it is not to be observed together with the Jews — nonetheless it can be gathered from them, without obscurity, that the custom of the Roman Church, and the ruling of the Roman pontiffs Pius [Pius I] and Victor [Victor I], by which Easter is directed to be celebrated on a Sunday between the 14th and the 21st Moon, was confirmed and renewed. For they plainly signify that all the Easterners, who formerly celebrated Easter with the Jews on the 14th Moon, embraced with united minds the practice of the Romans, who had always observed it on the Sunday after the 14th Moon. [Margin: The Council of Nicaea confirmed rather than instituted.] And that this was the mind of that great Council concerning the celebration of Easter — indeed, that a ruling on the matter was issued in that very canon — almost countless writers on Church affairs have taught. Among them the Venerable Bede confirms the same in many places, and especially in explicit words in Book 3,

chapter 15, of his *Ecclesiastical History of the English People*, where, in a certain debate about the correct celebration of Easter, he brings in one Wilfrid, who, when ordered by the King to speak, began thus: [Margin: Easter to be celebrated on the Sunday after the 14th Moon. Bede's view that the Council of Nicaea renewed the ecclesiastical decree on celebrating Easter on the Sunday after the 14th Moon of the first month, on the Lord's Day.]

"The Easter that we keep" — he is speaking of celebrating Easter on the Lord's Day after the 14th Moon, as is clear from what follows — "we have seen kept by everyone at Rome, where the blessed Apostles Peter and Paul lived, taught, suffered, and were buried; and so too in Italy, in Gaul, and so on." Then a little later: "But Peter, when he preached at Rome, remembering that the Lord rose from the dead on the first day of the week and thereby gave the world the hope of resurrection, understood that Easter must be kept in this way: that, according to the custom and the precepts of the Law, he should — just as John did — always wait for the 14th Moon of the first month to rise at evening; and once it had risen, if the Lord's Day (which was then called the first day of the week) was to come in the morning, he would begin to celebrate the Lord's Easter on that very evening, in the way we all do today. But if the Lord's Day was to come not on the next morning after the 14th Moon, but on the 16th, or 17th, or any other Moon up to the 21st, he would wait for it and, on the preceding Saturday evening, begin the most holy solemnities of Easter. And so it came about that the Lord's Day of Easter was kept only from the 15th Moon to the 21st. Nor does this evangelical and apostolic tradition abolish the Law; rather it fulfils it, for in it the precept is that Easter be kept from the 14th Moon of the first month at evening, up to the 21st Moon of the same month at evening. To the keeping of this observance all the successors of St. John in Asia after his death, and the whole Church throughout the world, were converted; and that this is the true Easter, and this alone is to be celebrated by the faithful, was not newly enacted by the Council of Nicaea but confirmed, as ecclesiastical history teaches."

Blessed Ambrose too, in his 83rd letter to the bishops appointed throughout Aemilia, writes as follows about the same Easter solemnity: [Margin: St. Ambrose's view on the celebration of Easter, from the decree of the Council of Nicaea.] "That it takes no ordinary wisdom to fix the day of the Easter celebration, both divine Scripture instructs us and the learning of our forefathers, who, meeting at the Council of Nicaea, among those decrees of the Faith that are as true as they are admirable, and having gathered together the men most skilled in calculation, also worked out a reckoning of nineteen years concerning the celebration in question, and established, as it were, a kind of cycle from which a

pattern might be generated for the remaining years. This cycle they called the ἐννεα-δεκαετηρίδα [Greek: enneadekaetērida, "nineteen-year period"; the standard classical form is ἐννεακαιδεκαετηρίς — the printed word breaks across the line at ἐννεα- / δεκαετηρίδα], following the principle that we ought not to waver over such a celebration by some idle opinion, but, once the true reckoning has been ascertained, so to act that our devotion does not clash, so that on one and the same night the sacrifice for the Lord's resurrection may be offered everywhere." Then, expounding more clearly what was decreed at the Council of Nicaea, he writes thus: "Two things are to be observed in the solemnity of Easter: the fourteenth Moon and the first month, which is called the month of new things." And somewhat later, after teaching that Easter is to be celebrated on the Lord's Day, he adds: "The month begins, not according to common usage, but according to the practice of the learned, from the equinox, which day is the 12th of the Kalends of April [21 March]," and so on.

In this letter St. Ambrose makes two points chiefly. First, that by the decree of the Council of Nicaea Easter is to be celebrated on the Sunday after the 14th Moon of the first month, because it begins from the equinox. By these words he explains that the first month is the one whose 14th Moon falls on the equinox — that is, on 21 March — or next follows it. For when he says that the first month begins from the equinox, and not before, he does not mean that the new moon of the first month must be reckoned from the equinox, but the 14th Moon. Otherwise Easter could never have been celebrated before 4 April, since on this reasoning the earliest Paschal 14th Moon of all would fall on 3 April — whereas he plainly teaches in the same letter that in his own time, by the ruling of the Council of Nicaea, Easter was celebrated in the month of March. And it is clear that he meant the Sunday after the 14th Moon to be taken. For in the same letter he asserts that Easter must be deferred to the following week

when the Lord's Day falls on the 14th Moon, as we set out above from this same letter of Ambrose. Secondly, he teaches the same thing: that the Fathers of the Council of Nicaea decreed that the 14th Moon of the first month should be found by means of the nineteen-year cycle of the golden number, since they entrusted the arrangement of it in the calendar to those most skilled in the art of calculation — namely, to Eusebius, Bishop of Caesarea [Eusebius of Caesarea], and to the Alexandrian Egyptians.

Bede states the same thing more plainly in his work *On the Reckoning of Time*, chapter 47, where he writes in this way: [Margin: The care of the golden-number cycle given to Eusebius of Caesarea and the Alexandrians by the Nicene Council.]

"Eusebius, Bishop of Caesarea in Palestine, was the first to draw up the order of the nineteen-year cycle for finding the fourteenth Moons of the Easter festival and the day of Easter itself, because the Moon of any age returns, after so long an interval, to the same day of the solar year — not that the Church of Egypt, or the rest of Christ's Church throughout the East, did not until then know how properly to find the Moon's course or the day of Easter, but because the things that in those very times used yearly to be worked out with labour and sent around the world, and often came into dispute, could more easily be learned once a cyclical rule had been fixed, and could thereafter be observed forever without any scruple of doubt." To this may be added what the same Bede teaches in his book *On the Reckoning of Computus*, chapter 16, namely that Eusebius, Bishop of Caesarea in Palestine, was the first to compose the order of the nineteen-year cycle. He repeats the same in Book 5, chapter 22, of the *Ecclesiastical History of the English People*, from the letter of Abbot Ceolfrid to King Nechtan [Naitanum], where these words occur:

"And so, at the equinoctial rising of the Sun, after the fourteenth day of the first month has been completed — all of which we have received as things to be observed by the Law — we still wait, as the Gospel warns, for the time of the Lord's Day within that same third week, and only then do we celebrate the votive feasts of our Easter, to show that we do not, with the ancients, venerate the throwing-off of the yoke of Egyptian bondage, but rather honour, with devout faith and love, the redemption of the whole world — which was prefigured in the liberation of God's ancient people and completed in the resurrection of Christ — and to signify that we rejoice with most certain hope in our own resurrection also, which we believe will take place on that same Lord's Day. This computus of Easter, which we show you as the one to be followed, is contained in the nineteen-year cycle, which indeed long ago — that is, in the very times of the Apostles — already began to be observed in the Church, especially at Rome and in Egypt, as we said above; but through the diligence of Eusebius, who takes his surname from the blessed martyr Pamphilus, it was arranged in order more distinctly, so that what up to then used to be announced each year to all the churches by the Pontiff of Alexandria might thereafter, once the series of the fourteenth Moons had been gathered into order, most easily be known by all." From all these testimonies it is plainly established that, by the Church's precept, Easter is to be celebrated on no other day than the first Sunday after the 14th Moon of the first month.

Now that this was not some new decree of popes and councils, but that from the very beginning of the infant Church this custom continually flourished at Rome

and among most other churches — namely, that Easter was celebrated not with the Jews on the 14th Moon but on the Lord's Day, and indeed that it was so handed down by the Apostles — can, it seems, be gathered clearly enough from several of the authorities we have cited. [Margin: The custom of celebrating Easter on the Sunday after the 14th Moon of the first month began in the time of the Apostles and is an apostolic tradition.] For the letter of the Council of Nicaea states in explicit words that the Romans, Alexandrians, and Egyptians had held that manner of celebrating Easter from the earliest times. This is understood more clearly from the passages of Bede, when he says that blessed Peter, when he preached at Rome, understood that Easter must be kept in this way, and that this custom is the evangelical and apostolic tradition, and that it began to be so observed in the Church in the very times of the Apostles, especially at Rome and in Egypt. But Abbot Ceolfrid affirms the same most clearly, as reported by Bede in Book 5, chapter 22, of the *Ecclesiastical History of the English People*, where it reads thus: "If, then, it could come about that the Lord's Day always fell on the fifteenth day of the first month — that is, on the 15th Moon — we could always celebrate Easter at one and the same time with God's ancient people (though distinct in the kind of sacraments), just as with one and the same faith. But because the day of the week does not run on an equal course with the Moon, the apostolic tradition — which was preached at Rome by blessed Peter and confirmed at Alexandria by Mark the Evangelist, his interpreter — decreed that, when the first month has come, and the evening of the fourteenth day has come within it, the Lord's Day should further be awaited, from the fifteenth up to the twenty-first day of the same month."

Eusebius too, in Book 5, chapter 22, of his *Ecclesiastical History*, testifies that the other churches — the Asian ones excepted — scattered throughout the whole world, kept the custom, continued from the apostolic tradition down to that time, of ending their fasts on no other day than the one on which the Saviour rose from the dead. Moreover, St. Cyril, Patriarch of Alexandria [Cyril of Alexandria], in all his Festal (Heortistic) sermons — which are very many, and in which he yearly announced to the people the solemn Lenten fast, the feast day of Easter, and Pentecost — always declares that Easter is celebrated on such a day of the month, on a Sunday, according to the evangelical or apostolic traditions. Again, the same St. Cyril, in his letter to Pope Innocent I [Innocent I] — which Johannes Stöffler [Ioan. Stoflerinus; Johannes Stöffler] cites in his *Roman Calendar*, proposition 32, at the beginning, and Albert Pigge [Albertus Pighius] in his book *On the Method of the Paschal Celebration and the Restoration of the Calendar*, proposition 8 — says thus: "The holy mystery of Easter, and its sacred solemnity, as it was handed down by our Saviour and the Apostles, would have remained inviolate, had not

the perversity of certain foolish men defiled it, among the other sacraments of the Faith," and so on. And there is no doubt that he is speaking of celebrating Easter on the Sunday after the 14th Moon of the first month, since he always steadfastly asserted that it must be so celebrated — from the teaching of Theophilus [Theophilus of Alexandria], his uncle and predecessor in the see of Alexandria — as is clear from the Festal sermons, in which he always perpetually sets before the people that Easter is to be celebrated on the Lord's Day.

Finally, this is evidently confirmed by the letter of Proterius, Prelate of Alexandria [Proterius of Alexandria], to blessed Pope Leo I, who had arranged, through the Emperor Marcian [Per Martianum Imperatorem], that the Bishop of Alexandria should explain Theophilus's Paschal cycle more accurately. For it reads thus in that letter — as the venerable Bede reports in his book *On the Reckoning of Time*, chapter 42, and in the little treatise *On the Equinox to Wicthed* [ad Vuichenredum] near the beginning, and Johannes Stöffler [Ioan. Stophlerinus] and Albert Pigge in their books, at the places cited: "The letters of your love, which our brother and fellow bishop Victorius brought as a dutiful service, gladdened me. For it was fitting that such writings should be sent from the prelate of the Church of Alexandria to the Apostolic See — writings that would show that, by the teaching of the most blessed Apostle Peter, the Egyptians learned the reckoning of the Easter feast from the beginning through blessed Mark his disciple, as it is also agreed the Romans learned it," and so on. And it is perfectly clear that in this letter the words concern the celebration of Easter after the 14th Moon of the first month, since it was always so celebrated at Rome and Alexandria. Hence, when Proterius says that the Ro-

mans, indeed, learned it from St. Peter, and the Alexandrians from St. Mark, it is clear that he asserts Easter must be observed in this way by apostolic tradition.

These points being thus settled — that Easter is to be celebrated on the Sunday after the 14th Moon of the first month — it must now be explained a little more carefully that the first month is the one whose 14th Moon falls on the day of the equinox, or next follows it, as we asserted above. [Margin: The error of some in defining the first month.] For there are those who think the first month should be defined otherwise, calling the first month the one whose new moon is nearest to the equinoctial day. Our Maestlin, too, is glad to adopt this opinion, so as to find an occasion for attacking the new calendar, as we shall see in its place. But these men are much deceived. For since it can happen that two new moons are equally distant from the equinoctial day — one before it, the other after — it could reasonably be doubted which of them should be chosen for the celebration of

Easter. Suppose, for example, that the equinox is set on 21 March, and that the mean full moon, or mean opposition of the luminaries (for in this business we use mean motions rather than true ones, as we shall show in Chapter 4), falls at noon of 21 March. Then the mean new moon that precedes the equinoctial day will be as far distant from noon of the 21st as the mean new moon that follows the same equinoctial day — since each is distant from the mean full moon by 14 days, 18 hours, 22 minutes, 2 seconds nearly, as we shall explain in Book 2. Therefore one might, with the best right, be in doubt which of those two new moons belongs to the first month. This will be understood clearly from the nineteen-year cycle of the golden number, which the Catholic Church used from the Council of Nicaea down to this correction of the calendar. For in it the golden number 8 was set both against 6 March and against 5 April. Hence, since each day is removed by an equal interval from 21 March — because 14 days are interposed both between 6 and 21 March and between 5 April and 21 March — it will be ambiguous whether the new moon of 6 March is the Paschal one, or rather the one that occurs on 5 April.

The same also appears from the cycle of epacts of the new calendar, which we shall show in Book 11 to be correctly distributed in it. For since the epact 25 in red [Epacta xxv rubra] is likewise set both against 6 March and against 5 April, the same ambiguity will necessarily arise about choosing the first Paschal month. And a greater difficulty will arise when the epact 24 [xxiiii] is in use, because its new moon, falling on 7 March, is nearer to the equinox — that is, to 21 March — than the new moon of the same epact which occurs on 5 April: for only 13 days are interposed between 7 and 21 March, whereas 14 days lie between 5 April and 21 March. According to the opinion, then, of those who think the first month should be measured from the new moon, that new moon of 7 March would be the Paschal one, while the other, falling on 5 April, would have to be rejected as not Paschal. This is entirely false, and contrary to the most ancient practice of the Catholic Church, which rejects the new moon of 7 March and appoints as Paschal the following one, which occurs on 5 April — for no other reason than that the 14th day of the former falls on 20 March, before the equinox, and must therefore be assigned to the last month of the year.

More correctly, then, is the first month described by the 14th Moon, which either falls on the day of the equinox or next follows it — as we have done, and as before us was approved by very many ecclesiastical writers, especially by the venerable Bede, most practised in this matter, both in other places and in these few passages that we have judged fit to adduce in confirmation of our view. [Margin: That the first month is rightly said to be the one whose 14th Moon falls

on the equinox, or next follows it.] Thus in his work *On the Reckoning of Time*, chapter 49, against a certain Victorius [Victorius of Aquitaine], who reckoned the first month and the Paschal fourteenth Moons otherwise, he writes as follows: "We know that the Egyptian discipline of calculation — which appears truer both in your own judgement (he is addressing Victorius) and by the consensus of the universal Church — is to be followed by all: namely, that the beginning of the first month runs from the eighth of the Ides of March [8 March] up to the day of the Nones of April [5 April]; that the fourteenth Paschal Moons run from the twelfth of the Kalends of April [21 March] up to the fourteenth of the Kalends of May [18 April]; and, further, that the Lord's Day of Easter is to be sought from the eleventh of the Kalends of April [22 March] — and this on the 15th Moon up to the 21st." By these words Bede plainly places the first Paschal 14th Moon at the equinox, and the last on 18 April; and accordingly he holds the first, that is, the Paschal, month to be the one whose 14th Moon falls either on the day of the equinox or next follows it. He declares the same more openly in chapter 43 of the same book, in this manner: "Both kinds of year (namely, the common and the embolismic), as was said above, take their beginning from the opening of the first month — which the Hebrews call Nisan, that is, from the kindling of the Paschal Moon — and the opening of this month must be observed by this rule: that the Paschal 14th Moon never precede the vernal equinox, but proceed lawfully either on the equinox itself (that is, on the twelfth of the Kalends of April [21 March]) or after it has passed. Whence it comes about that the beginnings of the lunar year are to be sought from the eighth of the Ides of March [8 March] up to the day of the Nones of April [5 April]. And that 14th Moon itself, occurring at its earliest on the twelfth of the Kalends of April [21 March] and at its latest on the fourteenth of the Kalends of May [18 April], causes the day of the Easter festival to be sought from the eleventh of the Kalends of April [22 March] up to the seventh of the Kalends of May [25 April]." He repeats the same in chapter 57, in these words: "For the Lord's Day that occurs after the 14th Moon is itself the Paschal Lord's Day of the Resurrection; and this 14th Moon shows its progress over the earth at evening, at its earliest at the equinox — that is, on the twelfth of the Kalends of April [21 March] — and at its latest on the twenty-ninth day from that point — that is, on the fourteenth of the Kalends of May [18 April]." Finally, he speaks thus in chapter 60: "The rule for this first month, and for its seven days of unleavened bread, is now such that whichever 15th Moon occurs after the equinox is to be understood as belonging to the first month, and whichever of its seven days, up to the 21st, receives the Lord's Day, offers a day fit for the joys of the Easter feast."

Since, therefore, the Roman and Catholic Church observes three things — by the decrees of the holy Pontiffs and Councils, as we have said — in the correct

celebration of Easter, on which the other movable feasts depend: the vernal equinox, the 14th Moon of the first month, and the first Sunday after that 14th Moon; it must now be declared what method the Church follows, so that in every place the sacred solemnity of Easter may be carried out by the faithful at the same time — that is, so that those three things necessary for its celebration may be sought out by all in the same way, with no discrepancy whatever existing among them. [Margin: Three things to be observed in the celebration of Easter.]

(Continuation of Chapter I.)

So that no one should be granted free license to err in fixing the equinox, the fourteenth Moon [Luna XIII] of the first month, and the Sunday on which Easter is to be celebrated, the Fathers of the Nicene Council established that 21 March be assigned to the vernal equinox, since on that day, or thereabouts, the equinox then fell. [Margin: That the vernal equinox was assigned by the Nicene Council to 21 March.] From this it follows that a fourteenth Moon [Luna XIII] preceding 21 March is reckoned to belong to the last month of the year, not the first, and is therefore unfit for the celebration of Easter; whereas the fourteenth Moon that falls on 21 March itself — or, if none falls on that day, the one that occurs first after 21 March — is the legitimate one for celebrating Easter. [Margin: Which and how many new moons are Paschal by decree of the Nicene Council.] From this it is clear that all and only the new moons that occur from 8 March to 5 April inclusive are Paschal, 29 in number: namely 24 in the latter 24 days of March, and 5 in the first 5 days of April. For among these 29 lunar months, no fourteenth Moon [Luna XIII] precedes 21 March, on which the equinox is fixed; rather each one's fourteenth Moon follows the equinox — the day we have named — except for the first new moon, whose fourteenth Moon falls on the 21st itself.

[Margin: On which days of the year Easter may be celebrated, and how many, by decree of the Nicene Council.] Since this is so, it is plainly established that Easter can and must always be celebrated on one of the days from 22 March to 25 April, so that the earliest and first possible Easter is 22 March, and the latest and last is 25 April. The whole Paschal solemnity thus has a range of 35 days, of which the first 10 fall at the end of March and the remaining 25 at the beginning of April. For when 21 March is a Saturday, and the first Paschal fourteenth Moon [Luna XIII] falls on it, the Paschal solemnity will be on the following Sunday, that is, on 22 March; and Easter cannot lawfully be celebrated before this day, nor has it ever hitherto been celebrated before it since the Nicene Council. Likewise, when 18 April is a Sunday, and the last Paschal fourteenth Moon [Luna XIII] falls on it, Easter will be celebrated on the next following Sunday, namely 25 April, after

which day Easter cannot be celebrated without offense by decree of the Nicene Council. And we have received these Paschal limits as established by the authority of the Nicene Council; they follow necessarily from placing the equinox on 21 March, as we have said.

[Margin: That the new moons were investigated by means of the golden numbers arranged in the Calendar, from the time of the Nicene Council up to the correction of the Calendar, so that all should celebrate the new moons on the same days.] Next, so that no further disagreement should arise among Christians concerning the new moons — and hence concerning the fourteenth Moons [Luna XIII] — as had happened from the Nicene Council down to roughly the time of the Emperor Justinian [Justinian I], but that all should declare the first day of the Moon on the same days, the 19 golden numbers received from the Alexandrians were arranged by Dionysius the Abbot [Dionysius Exiguus] through the days of the Calendar by such a device that each was prefixed to the day of any month on which the new moon fell in the year when that golden number was in use. Thus, while golden number 1 was current, the new moon occurred throughout that whole year on that day of each month to which golden number 1 was prefixed; while golden number 2 was current, the new moon fell on the day that had golden number 2 prefixed; and so on for the rest — so that the new moons always fell on different days of any given month, just as all 19 golden numbers were assigned to different days of the months, until 19 years had passed, after which the golden number was again 1, and the new moons accordingly returned to the same days, and so forth. But you will find more on this matter explained in Book II [lib. II].

[Margin: That the Cycle of Dominical Letters was devised so that there should be no disagreement in celebrating the Lord's day.] Finally, so that it should be clear to all when the Lord's day fell, the Cycle of Dominical Letters was instituted, comprising 28 years, so that once the dominical letter of any year was known, there would be no divergence among Christians in the celebration of the Lord's day — and hence in the celebration of the Paschal solemnity.

WHY THE CALENDAR HAD TO BE CORRECTED, AND IN WHAT ITS CORRECTION CONSISTS. CHAPTER II.

(CVR CALENDARIVM CORRIGI DEbuerit, & in quo eius correctio consistat. CAPVT II.)

[Margin: That the equinox and new moons, before the correction of the Calendar, no longer fell on the same days as they did at the time of the Nicene Council.]

Everything that we have said must be observed in the celebration of Easter was rightly and wisely determined by the authority of the Nicene Council. But because in our own age the vernal equinox no longer fell on 21 March, but on about the 11th, and likewise the new moons were not correctly indicated by the golden numbers placed in the Calendar, but four days and more later than they should have been, it came about that Easter has very often, right up to the present time, been celebrated contrary to the ordinance of the Nicene Council. [Margin: Which lunations that were Paschal by the Nicene Council were rejected as non-Paschal before the correction of the Calendar, on account of the error of the equinox.] For since, as we said above, the first lunar — and hence Paschal — month is the one whose fourteenth Moon [Luna XIII] either falls on the day of the vernal equinox or immediately follows it; and since, before the correction of the Calendar, the vernal equinox fell around 11 March; it follows that all fourteenth Moons [Luna XIII] from 11 March to the 20th were, by the prescription of the Nicene Council, Paschal — that is, of the first month. Yet the Church always rejected these as belonging to the last month and as preceding the equinox, because, together with the Nicene Council, it had fixed the vernal equinox to 21 March. Hence it came about that whenever a fourteenth Moon [Luna XIII] followed the 11th [?] of March and preceded the 21st, Easter was celebrated in the second month. [Margin: When, before the emendation of the Calendar, Easter was celebrated in the second month, on account of the error of the equinox. Had the Calendar not been corrected, it would have come about after some years that Easter was always celebrated in the second month, then the third, fourth, and so on, because of the equinox's advance toward the beginning of the month.] And this error, creeping on obscurely day by day, would have advanced still further had no remedy been applied — so much so that, as time went on, all the Paschal fourteenth Moons [Luna XIII] would have been abandoned as useless, and Easter would always have been celebrated in the second month, indeed at length in the third, the fourth, and so on, and even in high summer: which would surely have been utterly absurd and altogether contrary to the decrees of the Fathers.

[Margin: Had the Calendar not been corrected, it would have come about that Easter was celebrated at the new moon itself, on the second Moon, third, and so on, on account of the error of the new moons, which were sought by means of the golden numbers.] Next, on account of those four days and more by which the new moons, as we said, were indicated in the Calendar by the golden numbers later than the case required, it often happened that Easter was celebrated on the 25th Moon [Luna xxv]. This occurred when the fourteenth Moon [Luna XIII] found by the golden number — which was in truth the eighteenth Moon [Luna XVIII] — fell on a Sunday, and Easter was consequently deferred to the following Sunday.

[Margin: On account of the error of the equinox, and of the fourteenth Moon [Luna XIII] found from the golden numbers, it often happened that Easter was celebrated with an error of 7, or 28, or 35 days before the emendation of the Calendar.] But this manifestly conflicts with the decrees of the Supreme Pontiffs and of the Nicene Council, which insist again and again that Easter is to be

celebrated from the fourteenth Moon [Luna XIII] of the first month exclusive up to the twenty-first inclusive. And an error of this kind, had it not been met by some remedy, would have grown greater still thereafter, so that the most holy Easter would have come to be celebrated on the thirtieth Moon [Luna XXX], and indeed at the very new moon — that is, on the first day and the second Moon [Luna II], the third [III], and so on. And how much trouble this would have brought with it, there is no one who does not see.

[Margin: On account of the error of the equinox and of the fourteenth Moon [Luna XIII], it often happened that Easter was celebrated with an error of 7, or 28, or 35 days.] From this error of the vernal equinox and of the fourteenth Moon [Luna XIII] it came about that Easter was very often celebrated 7, or 28, or 35 days later than the decrees of the Fathers prescribe — as happened, before the restoration of the Calendar, in the years 1565, 1568, 1576, and 1579. The same would have happened, had the Calendar not been emended, in the years 1595, 1598, 1603, 1606, 1609, and very many others, in all of which there would have been an error of 35 days in the celebration of Easter — to say nothing of the years in which an error of either twenty-eight or seven days was committed. This is sufficiently apparent from Paul of Middelburg [Paulus Middelburgensis], in Book II of his *Paulina*, where he computed the Paschal solemnities from the year 1500 to the year 3000, together with the errors that were being committed according to ecclesiastical usage. Out of all these, only 200 festal days of Easter are found to be legitimate, while 1301 others were celebrated contrary to the decrees of the Fathers, with an error sometimes even of 42 days — an error that would indeed have grown into still more days as time went on, had the Calendar not been corrected. [Margin: That after many years an error of 42 days and more would have arisen in the celebration of Easter, had the Calendar not been corrected.]

[Margin: The reason why the restoration of the Calendar was necessary.] Therefore, so that those inconveniences and absurdities we have recounted might be avoided, and so that posterity should not fall into greater ones — (I say nothing here, in this place, of the disturbance of history and of the seasons that would have followed from that continual anticipation of the vernal equinox toward the beginnings of the months: namely, that the Lord's Incarnation would

in the course of time have slipped into summer, the Nativity of CHRIST the Lord likewise into the spring, the Birth of St John the Baptist into autumn, and so on — as is set out clearly in the book of the new method of correcting the Roman Calendar) [Margin: The inconveniences to history, to the seasons, and to the chief celebrations of the year, had the Calendar not been emended.] — so that these inconveniences, I say, might be avoided by posterity, it was altogether necessary that the vernal equinox be restored to its former seat, the one assigned to it by the Fathers of the Nicene Council, that is, to 21 March, and that the new moons be shown by the numbers arranged in the Calendar in such a way that their full moons should not, so far as could be done, diverge from those that computation according to the mean motion exhibits. [Margin: In what the correction of the Calendar consists.] But since the equinox could not be restored to its seat except by the removal of some days, it came about that the Solar Cycle — that is, the Cycle of Dominical Letters — in use in the Church of GOD up to this time, had necessarily to be interrupted. It was necessary, then, to renew this Cycle also, so that by means of it the dominical letter might be found for any proposed year no differently after the correction of the Calendar than before it. And so, in these three things — the restoration of the equinox, the emendation of the new moons, and the renewal of the Solar Cycle — the whole business of the correction of the Calendar consists. By what method these were carried out, we shall make plain in what follows.

WHY THE VERNAL EQUINOX WAS RESTORED PREFERABLY TO 21 MARCH [ad diem XXI. Martii], AND BY WHAT METHOD IT WAS BROUGHT BACK. CHAPTER III.

(CVR AEQVINOCTIVM VERNVM AD DIEM XXI. Martii potissimum, & qua ratione reuocatum sit. CAPVT III.)

[Margin: Various opinions concerning the restoration of the equinox.] Among those who wrote on the correction of the Calendar, there were various opinions concerning the restoration of the equinox. For some judged that it should be left on the day where it was found at the time of the correction, namely on 11 March. Others asserted that it should be brought back to the 25th of the same month — that is, to the day of the Lord's Incarnation — because they held that the Incarnation of the eternal SON of GOD had taken place at the vernal equinox. But most, by a more prudent counsel, urged that it be restored to 21 March, where it was found to stand about the time of the Council. [Margin: Which opinion Gregory XIII followed in restoring the equinox.] And Gregory XIII rightly

embraced the opinion of these last, as being the one that involved the least novelty and change. For if the equinox had been left around 11 March, where it stood before the correction, or had been brought back to 25 March, or to any other day differing from the 21st, it would have been necessary to alter all the Paschal limits established by the authority of the Nicene Council, and to renew all the Breviaries and Missals — since all these have been so arranged and ordered as if the vernal equinox perpetually fell on 21 March. What great disturbance this would have brought upon the faithful, he certainly saw who had seen that Easter and the other movable feasts are now celebrated on days other than those on which they were celebrated of old by the ancient Fathers, as no one doubts. This is especially so since it would have brought no small loss upon churchmen, on account of the discarding of an almost countless number of ecclesiastical books, and the immense expense that would have been needed for buying new books pertaining to the worship of GOD. For most churches and monasteries have libraries of such books valued at many thousands of gold pieces, all of which would have been rendered useless had any day other than 21 March been adopted — the day on which the equinox was found at the time of the Nicene Council. For by this means the decree concerning the celebration of Easter, sanctioned by the Fathers in that Council, remained wholly intact and unimpaired. Finally, since the greater part of the Martyrs, Doctors, Confessors, and Virgins, whose solemnities the Church piously venerates in grateful memory, flourished about the times of the Nicene Council — the Martyrs indeed a little before, under Decius and Diocletian, the most cruel persecutors of the Church of GOD; the Confessors at the very time of the Council, or a little after, in the times of Basil, Gregory of Nazianzus [Gregory Nazianzen], John Chrysostom, John of Damascus [John Damascene], Ambrose, Augustine, Jerome, and Gregory the Great; and when the deserts of Egypt and Palestine were filled with a countless multitude of monks and anchorites under Paul, Antony, and Hilarion, those most holy Hermits — the equinox could not have been brought back to a more

fitting time than to the times of the Nicene Council, so that the festal days of the Saints might be celebrated at their proper seasons — that is, not far from those in which they lived on earth. For if it had been reduced to the time of the Lord's Incarnation, or retained in the place where it was found before the correction, the seasons of all those Saints would have been thrown into confusion and disorder.

[Margin: By what method the vernal equinox was restored to 21 March.] The equinox, then, was restored by Gregory XIII, Supreme Pontiff, to 21 March, ten days being removed from the month of October in the year 1582, in such a way

that after the fourth day of October — which is sacred to St Francis [B. Franciscus] — instead of the fifth day, the fifteenth was taken up at once, the ten days in between being that year wholly omitted. For by this means it came about that in the following year 1583, and in the others thereafter, the vernal equinox fell ten days later than before this correction. And so, whereas it had formerly occurred around 11 March, it is now seen to fall around the 21st, just as in the times of the Nicene Council.

[Margin: Why the 10 days were removed all at once from the year 1582, and not one from each of the several years or months.] This restoration was likewise made by the removal of ten days at once from a single month, and not by the omission of ten intercalary days over 40 years, nor by the subtraction of those same 10 days from 10 months, taking away one day from each single month — as some would have preferred. This was both because many things might have arisen in the course of 40 years to impede the correction, and also because the Cycle of Dominical Letters would then have had to be interrupted more often, whereas in this restoration of ours it has been interrupted only once.

[Margin: Why the equinox anticipated its seat by 10 days in the Calendar, from the time of the Nicene Council up to the correction of the Calendar.] If anyone should further wish to know how it came about that the equinox forsook its former seat — that is, 25 March — and reached the 11th, let him understand that the cause of this is that Julius Caesar, whom the Roman Catholic Church followed, assigned to the length of a single year more than was right. For he established the solar year at 365 days and 6 hours. And because in the civil year, which comprises only whole days, he left out those six hours, which in four years make up a whole day, he decreed that in every fourth year one day, made up of 24 hours, should be intercalated, and the year become one of 366 days, which they called bissextile. [Margin: The length of the year according to Julius Caesar and the Church.] But the true solar year, which they call the tropical year, is not so great, but is smaller by some minutes of an hour — so that, according to the tables of Alfonso, King of Spain [Alfonso X of Castile], it comprises 365 days and only 5 hours, 49 minutes, 16 seconds. [Margin: The length of the year according to the Alphonsine tables.] This length of the year is in a way midway between the greatest and the least length of the year. For, as we shall say more fully in Chapter VI of this book [Cap. vi. huius lib.], the more skilled astronomers have observed that the solar years are unequal: they affirm that the greatest year was about the times of Hipparchus and Ptolemy, the least in the age of al-Battānī [Albategnius], and a kind of mean around the times of King Alfonso, and that it has now again come near to its greatest magnitude. [Margin: By how much the Roman, or

ecclesiastical, year exceeds the Alphonsine year.] And so the Roman year, which is in use in the Church, exceeds the Alphonsine year — which we said is roughly midway between the greatest and the least — by 10 minutes and 44 seconds of one hour. From this it comes about that by that same number of minutes and seconds the equinoxes and solstices anticipate their seats in each Julian year; for when the Sun, by its own motion according to the Alphonsine tables, returns to the same point of the equinox or solstice from which it had departed, there are lacking, to complete the Julian year, those 10 minutes and 44 seconds of one hour which we mentioned. [Margin: In how many years the equinox anticipates one day, according to the Alphonsine years.] Wherefore, according to these same tables, the equinoxes and solstices run ahead of their seats by one whole day in about 134 years, and by about three days in 402 years. But if the length of the year that the Church uses agreed in every respect with the annual motion of the Sun, no anticipation of the equinoxes and solstices would be seen, but they would recur always on the same days of the year.

[Margin: Why the correction of the Calendar was instituted in the year 1582, and in October rather than in another year and month.] But if anyone should ask why that removal of ten days was made from the year 1582, in the month of October, and not rather from some centennial year, or from some other bissextile year — and not in October but in any other month whatever (for this in particular troubled Maestlin [Michael Mästlin]) — the answer is ready to hand. Those ten days could indeed have been removed from any year whatever, and even from any month; but the year 1582 was chosen because at that time all things necessary for the correction were first made ready and brought to completion. For the responses of all the Kings, Princes, and Commonwealths, and of the chief Universities, had been brought to the Supreme Pontiff, and had been examined as diligently as possible by the mathematicians convened for the emendation of the Calendar. Therefore, lest the restoration of the Calendar — which all Christian Princes and Commonwealths had wonderfully praised and approved — should be delayed any longer, it seemed good to the Supreme Pontiff to appoint the year 1582 for the correction so greatly desired.

[Margin: Why the correction was ordered to be made, in the year 1583, in more remote regions, in February.] As for why this was done in October rather than in another month, there was no other cause, nor is any other mystery to be sought in the matter, than that this month seemed the most fitting for the business, since it has more days free of the celebrations of the Saints. Hence it came about that the ten days removed from it produced less disturbance and confusion in the performance of the Divine Offices among churchmen. For although in February,

March, and April also a few festal days of the Saints are celebrated, nevertheless, because into those months fall Septuagesima, Lent, and the Paschal season, it was judged that these were not to be deprived of days, so that those seasons, which are celebrated by the Church with the utmost devotion, might run their course in continuous order without any interruption. This was especially so because if, for example, Septuagesima had then been celebrated according to the new Calendar on 14 February, with the ten preceding days omitted, there would have been only four Sundays after the Epiphany, and the remaining two could not have been inserted before Advent, since in that year there would have been only 24 Sundays after Pentecost. But because some provinces had not yet removed the ten days from October of the year 1582 — since copies of the new Calendar could not be conveyed to them so quickly — it was, by excellent counsel, arranged that in the following year 1583, without waiting for October, ten days should be removed from February, so that those peoples should not any longer differ from the Roman Church in the numbering of days. For although in that year those who had not yet emended the Calendar would celebrate Easter on the same day as we, nevertheless they would have differed from us in the number of the day, since we would keep Easter on the tenth day of April, but they on the last day of March. There is no reason, then, why Maestlin should torment himself so greatly in inquiring after the cause why, in the appointed year 1582, the Supreme Pontiff willed the restoration of the Calendar to be made in the month of October, and in the year 1583 in the month of February.

But, that the arrogance of Maestlin, and at the same time his ignorance in the business of the Calendar, may be made manifest to all, and more

(Page ends: "& lu-".)

and it appears clearer than daylight how craftily and maliciously he has conducted himself in his examination — driven more by a zeal to slander the new Calendar than to search out the truth. I should like, then, to examine here a little more closely the pretext he has invented for the correction's being carried out in October — a pretext he devised solely to impose upon people and to rail the more freely against the Roman Pontiff. He writes as follows:

But the beginning of this correction could not be made before the Easter of the year 1582. For had it been done, the whole work of this Calendar would have been imperiled; a great part of the Pontiff's authority, and of his calendar-makers', would have been endangered; all the expense scraped together and laid out for its sake would have been wasted; and — what is greatest — the Pontiff would once again have been cheated of

his hope. For in that very year the empty futility of this Gregorian Calendar's calculation would have been detected. For since the golden number, which that year was 6, gave an epact of 26 [xxvi] and set the Paschal terminus on 17 April — which was a Saturday — it followed, according to the numbers and rules of the new Calendar, that the next day, the 18th, should be Easter Sunday. But on that very Sunday fell at last the true opposition of the Moon and Sun, according to astronomical calculation; and so in that very year 1582 Easter would have had to be celebrated at the full moon. This would beyond doubt have been highly ominous for the new Calendar: for it could not have escaped anyone's notice, since in each and every almanac or perpetual calendar this full moon would have been found marked on Easter day. And it would have been the more conspicuous to unlettered and lettered alike (and there is scarcely anyone who does not always carry some such annual almanac about with him, or at least keep one fixed to the wall at home) because in that year the old Calendar's Easter kept its fitting place, namely the 25th of the new, or the 15th of the old Calendar. Who, then, will doubt that the Pontiff feared he and this work of his would be hissed off the stage, because he was dragging the feast of Easter out of its true place and casting it into an erroneous — or, as the author calls it, a heretical — one? But now that this danger has been cunningly, not to say deceitfully, avoided, both he and the author of the Calendar hope they are now quite safe; for they are confident that no one will have wit enough to draw the calculation back over the years already elapsed. And even if someone should attempt this, they trust the calculation will not carry as much weight as it would have had, if the falsehood had been shown in the present, plain case. But if this grossest error — which, on the author's own view, is heretical — with which this new Calendar of yours labored at the very outset of its inauguration, is not the true cause of the said postponement, then you mathematicians, point out another; and at the same time defend this very error of the present year. But I know that neither is possible for you to do.

[Margin: Maestlin's reasoning why the correction was made in October, and not before the Easter of the year 1582 — that is, in February.]

By these words Maestlin plainly betrays his rashness and ignorance, not only to the mathematicians whom he challenges, but to everyone else not unversed in these matters. For he confuses the 15th day of the Moon with the 14th, and calls "Quartodecimans" — heretics — those who celebrate Easter on the 15th Moon,

that is, at the opposition of the Moon with the Sun. Thus he is convicted of being utterly ignorant of what the Fathers and the Councils decreed concerning the right celebration of Easter, and of what the Church has observed in this matter down to the present time. For it was never forbidden that Easter be celebrated on the 15th Moon, or at the full moon (as he wrongly supposes), but only that the Paschal solemnity should not be kept on the 14th Moon, with the Quartodeciman heretics, without waiting for the Sunday after the 14th Moon of the first month. From this alone one may plainly infer Maestlin's ignorance and rashness, in that he dares so impudently to censure what the Church, by the prescription of the Fathers and Councils, has always most religiously observed. And so, if in the year of the correction, 1582, Easter had been celebrated according to the new Calendar, the Church would in no respect have departed from the Decrees of the Fathers and of the Council of Nicaea, but would have carried it out most correctly according to their judgment — as is obvious to anyone even moderately versed in the ecclesiastical computus. For since in that year (had the ten days been removed in February) the mean opposition of the luminaries — which in this business the Church employs, the true opposition being set aside — fell, according to the tables of Antonio Magini [Giovanni Antonio Magini], which are more recent, on 17 April at 7 hours 57 minutes after noon, or rather, according to the Prutenic Tables, at 3 hours and more before noon: who will doubt, save Maestlin alone, utterly ignorant of ecclesiastical matters, that on the following day, the 18th, which was a Sunday, Easter could have been lawfully celebrated by the prescription of the Fathers of the Council of Nicaea, since that Sunday immediately follows the 14th Moon of the first month? Indeed, the Church never keeps the Paschal solemnity more correctly than when, in the first month, the Sunday falls on the mean opposition of the Sun and Moon. For the remaining six days of the Moon that follow — namely the 16th, 17th, 18th, 19th, 20th, 21st — were taken up for the celebration of Easter for the sake of the Sunday, which does not always fall on the 15th Moon (as would be desirable), that is, on the mean opposition, before which it is not lawful to celebrate Easter, but sometimes on the 16th, or 17th Moon, and so on up to the 21st inclusive, beyond which it is not permitted to defer Easter. But this new mathematician of Tübingen was ignorant not only that Easter may lawfully be celebrated on the 15th Moon, but [maintained] that Easter of the year 1582, had it been celebrated according to the new Calendar, would have been wrongly kept on whatever day — as though the Church employed the true motions, and not rather the mean, or cycles, for this business, as we shall make plain in the next chapter. And in this too he wondrously deceives himself, since in that year the true opposition of the luminaries occurred on 17 April, at about 15 hours after noon; so that no one can

doubt that that Easter was legitimate even according to the true motion, since it would have been celebrated after the full moon, and thus much more after the true 14th Moon — though this is not necessary.

[Margin: Maestlin's ignorance of what the Catholic Church has always observed in the celebration of Easter.]

[Margin: The Decrees of the Fathers do not forbid celebrating Easter on the 15th Moon, but on the 14th Moon.]

[Margin: Easter of the year 1582, by the new Calendar — had the removal of the 10 days been made in February — would then not have been illegitimate, contrary to what Maestlin wrongly maintains.]

[Margin: Easter of the year 1582, by the new Calendar — had the 10 days been removed in February — would have been legitimate even according to the true motion, contrary to what Maestlin maintains.]

And lest Maestlin suppose that I speak rashly (as he himself is wont to do) and lay it down without any authority — that Easter may be celebrated on any Sunday after the 14th Moon up to the 21st, and that from the beginning of the primitive Church this was so ordained — let him weigh carefully the authorities and testimonies of the Fathers and Councils which we adduced in Chapter I to confirm that Easter must be celebrated on a Sunday, and that the first month is that whose 14th Moon falls on the equinox or immediately follows it. For in all of them it is expressly explained that Easter must be celebrated on the first Sunday after the 14th Moon of the first month — which of course falls on the 15th, 16th, and so on up to the 21st Moon inclusive. To these authorities may be added the following.

[Margin: That Easter may be celebrated on the 15th Moon, if that day be a Sunday, is proved by various testimonies and by the practice of the Church.]

Bede the Venerable [Bede], in his book *On the Reckoning of Time* [*De temporum ratione*], chapter 57, after teaching that the Sunday which occurs after the 14th Moon is the Paschal day of the Lord's resurrection, adds a little later:

And if it could happen that in every year the 14th Moon fell on a Saturday, our Paschal observance would differ in no point of time from the legal one. For we too, in accordance with the ordinances of the Law, always sacrificing on the evening of the 14th Moon of the first month, and eating the flesh of the spotless Lamb, and sprinkling His blood upon our doorposts to drive off the destroyer — that is, the water of Baptism —

— and celebrating the solemnities of the Paschal Masses, we should overcome the spiritual Egypt, and at the dawning of the morning on the 15th Moon of the same month we should enter upon the first day of unleavened bread, and complete the seven lawful days of that same festival — from the morning of the fifteenth day to the evening of the twenty-first of that month, that is, from Easter Sunday to the Sunday of the octave of Easter — with due reverence. But because the same day of the Moon rolls round onto different days of the week, it comes about that we, who because of our Redeemer's resurrection are taught to reserve the beginning of the Paschal feast for the Lord's Day, sometimes have the festival begin on the seventh day after the start of the legal unleavened bread.

Do you not see that here Bede teaches most plainly that Easter Sunday can fall on the 15th Moon, and that then indeed Easter is celebrated most correctly?

The same author teaches most clearly in chapter 59, where he says thus:

For whereas in the Old Testament the Paschal season is commanded to be observed by three marks of evidence — namely, that it be kept after the equinox, in the first month, and in its third week, that is, from the evening of the 14th Moon (which is the beginning of the 15th) to the evening, that is, to the term of the 21st — a fourth rule in its observance has been laid upon us from the time of the Lord's resurrection: that when, the equinox being passed, we have seen the 14th Moon of the first month rise in the evening, we should not at once leap forward to keep the Pasch, but, awaiting the Lord's Day — on which He deigned by rising again to accomplish the Pasch itself, that is, the passage from death to life, from corruption to incorruption, from punishment to glory — we may at last on that day celebrate the fitting solemnities of Easter.

And a little later:

Whenever, then, we have the Lord's Day fall at once, as the 14th Moon comes on, our Paschal season is in no way discordant with the legal one, although we keep the solemnities of that same Pasch with other kinds of sacraments. But whenever the same Lord's Day occurs on the second, or third, or fourth, or fifth, or sixth, or seventh day thereafter, not even so do we dissolve the Law or the Prophets, but rather fulfill them with the sacraments of evangelical grace.

This custom of the Church he confirms also from Theophilus, Bishop of Alexandria [Theophilus of Alexandria]; and he repeats the same rather often in chapters 60 and 61 and elsewhere.

This very thing all the computists, as many as have written on the celebration of Easter, constantly affirm by common consent. For, to pass over others, Paul of Middelburg [Paul of Middelburg], Bishop of Fossombrone, writes thus not far from the beginning of Book XII:

We therefore, in reckoning the Paschal Moon, shall call the day of the opposition of the luminaries the 15th Moon; and if it falls on a Sunday, we shall note that Easter is to be celebrated on that same day, according to the Canon established by the holy Fathers in the Council of Nicaea, by which Easter is commanded to be celebrated on the Sunday from the 14th Moon to the 21st — that is, on the first Sunday after the 14th Moon.

From all this it is established that Easter can be rightly and lawfully celebrated — indeed, that by the Decrees of the Fathers it must altogether be celebrated — on the 15th Moon, that is, at the opposition of the luminaries, if the Lord's Day then falls. And we see that this custom has always been preserved in the Church, both Eastern and Western. For down to our own age Easter has always been celebrated on the first Sunday after the 14th Moon.

Let Maestlin, then, be ashamed — if he is capable of shame — of his arrogance and rashness: that he styles himself a mathematician, and yet is utterly ignorant of a thing most familiar not only to mathematicians but to all Christians, namely that Easter can be celebrated on the 15th Moon; seeing that he does not scruple to call it a most gross — indeed a heretical — error, if Easter be celebrated at the mean full moon. But what wonder that a heretic should be ignorant of the custom observed by the Church in the celebration of Easter, when he so rashly and impudently spurns and despises all her laws, so that, driven by a spirit of vertigo, he can freely believe whatever comes into his head? See there, Maestlin, the true cause of the postponement into October of the year 1582, which you so earnestly demand be pointed out to you. You have at the same time one who defends the Easter of that same year — had it been celebrated according to the new Calendar — and proves that it would have been legitimate, from the Decrees of the Fathers, and of the Nicene Council, and of the Councils, and from the practice of the Church. Yet in this very matter, committing the grossest error yourself, you falsely accuse others of committing it — while you were rashly persuading yourself that neither was possible for us to do.

[Margin: Easter of the year 1582, by the old Calendar, was celebrated — against the Decrees of the Fathers — in the fourth week, that is, on the 14th [?] Moon.]

The Supreme Pontiff, then, if he had determined to remove ten days from February, could not have feared — as you falsely boast — that he and this work of his would be hissed off the stage. For he would not, as you insinuate, then have dragged the feast of Easter out of its true place and cast it into an erroneous or heretical one; on the contrary, he would rather have restored it from an erroneous place back to its true one. For in that year Easter was celebrated on the 23rd Moon [Luna xxiii], that is, in the fourth week, against the sanctions of the Fathers and Councils; whereas, according to the new [Calendar], it would have been carried out on the 15th Moon, that is, at the beginning of the third week, in which alone Easter can lawfully be celebrated. Now put forth the powers of your intellect, and with that marvelous prudence of yours (with which you would have anyone endowed who draws the calculation back over past times) — or rather, as I interpret it, with your notable impudence — defend this erroneous Easter of yours which the [old] Calendar exhibited, and prove, as best you can, that the one the new Calendar would have shown would have been false. *Hic Rhodus, hic saltus* — here is Rhodes, here make your leap. For I am glad to turn back against you the very saying which you are wont rashly to hurl, more than once, at the supporters of the Gregorian Calendar, as though you had already won the victory.

[Margin: That the Church sometimes celebrates Easter on the 14th Moon must be ascribed to a defect of the cycle, which cannot be altogether perfect; but that she does not on that account fall into the heresy of the Quartodecimans.]

For when you falsely suppose that the error which, on the view of the Calendar's author, is heretical is committed by celebrating Easter at the full moon, and so call it heretical (as you do also in other places), you plainly play the sycophant. For in the Calendar the reference is to the Quartodeciman heretics, who, against the decrees of the Councils and the usage of the universal Church, contended that Easter should be celebrated with the Jews on the 14th Moon. From this error, however, the Church is far removed, even if sometimes, on account of the imperfect reckoning of the lunar cycle (for no cycle, however perfect, can indicate the new and full moons — as we shall show hereafter — in such a way that they always answer exactly to the celestial motions), she celebrates Easter on the 14th Moon. This can indeed sometimes happen in the new Calendar, yet far more rarely than in the old, which followed the cycle of the golden number issued at the Council of Nicaea — and especially so near the times of that Council, as we shall show hereafter in its place. The Church, I say, is far from the error of

the heretics, if she sometimes, on account of the imperfect nature of the cycle, celebrates Easter on the 14th Moon; for she does not affirm that Easter is to be celebrated on the 14th Moon, but by chance and (to speak with the philosophers) accidentally celebrates it so on occasion, and applies all diligence so to arrange the cycle in the Calendar that, as far as possible, Easter is never celebrated on the 14th Moon, as we shall explain more fully below. But you and your like, who have all entered into an ancient covenant against the Catholic Church of God, cannot escape the mark of heresy, since, despising all the laws

and ordinances of the Catholic Church, and driven by a spirit of pride, you preach a new faith and a new Gospel, and so stubbornly defend the collapsed old Calendar, out of hatred for the new one issued by the Roman Pontiff.

And yet you have dared, O man of dead-and-buried shame, to charge greed and sordidness upon Gregory XIII, Supreme Pontiff, whose lavish generosity — or rather munificence — has overflowed into the whole world, and above all into Germany, so as to have quenched the slander of all the heretics but you. As if that Pontiff, as great in greatness of soul as in his priesthood, while he poured out vast treasures for the salvation of all nations, were aiming — by issuing the new Calendar (as you allege) — to collect a few paltry coins from the common folk! Indeed I would confirm on oath (for I was present in these affairs) that not so much as a farthing came from this into the Pontiff's treasury — did I not fear that my testimony would do injury to the well-attested bounty of so great a Pontiff: especially since your accusation of its own accord rebounds from him and falls back upon yourself, who had no reason to publish these "examinations" except to scrape together a little money from the ignorant. For the bit of glory you snatched at the same time by your calumny has turned, as you see, into disgrace. But enough of this. For I will not allow myself to seem to imitate the slanderer's slander. These things have been said not to slander, but to repel slander, and at the same time so that all might take the measure of this splendid "examination," seeing almost with their own eyes with how fair and sincere a mind, with how keen a wit, and with how firm reasons this little manikin, molded of clay and mud, has striven to assail the Gregorian Calendar, and to tear down the consensus of the whole Christian world and the Pontifical authority — whose impudence, wrapped in such great ignorance, the very title of the "examination," as we have shown, has proclaimed to be so great that nothing else could in any way excuse it, unless he were willing to confess (what the thing itself proclaims) that, when he wrote the "examination," he was not sufficiently sober.

Why the Church, Setting Aside the True or Apparent Motions, Employs Only the Mean — or Equable — Motions, or Rather Cycles, in the Celebration of the Movable Feasts. Chapter IV.

The equinox having been restored to its former seat, in which it was placed by the Council of Nicaea, a method also had to be prescribed by which that same equinox might be kept in its place. To make this clearer, it must first be explained a little more carefully what motions the Church considers and employs in the celebration of the movable feasts. For once this has been set out, it will also be plainly established how rashly and without cause the new Calendar is attacked by Maestlin. Behold, then: setting aside the true motions of the Moon and Sun — as belonging rather to the astronomers — she considers the mean and equable motions alone.

[Margin: That the Church considers only the mean motions, for many reasons.]

First, because the true motions are unequal — now swifter, now slower — whereas the mean motions are always equal and uniform; and so the latter can be reduced to a cycle without difficulty, but not the former. Since, then, for investigating the equinox, the new moon, and the Paschal full moon, easy rules had to be handed down — rules that could be grasped and retained without great labor by anyone, even one wholly untrained in and ignorant of astronomy, and without knowledge of the astronomical tables, so that the whole people should not be forced to learn astronomy thoroughly (which is a novel and unheard-of thing, and utterly impossible to accomplish) — the mean motions had to be adopted rather than the true, especially because error can more easily creep into the true and apparent motions than into the mean. Nor does it much matter that the true motions really exist in the celestial bodies, while the mean were devised by the astronomers only in thought and by art, namely so as to investigate the true by means of the mean. For the Church is not bound, nor ever was, to the exact laws and motions of the stars; it is enough if she attains the motions of the Sun and Moon with a certain rough-and-ready skill (as they say, "by a coarse Minerva"), provided she does not depart far from the truth. And this the most ancient practice — continued and carried on from the primitive Church down to our own age — plainly demonstrates.

[Margin: First reason. Because the mean motions are equal and uniform, and therefore suited to the grasp of the common people; whereas the true motions are unequal and irregular.]

Next, because if the Church used the true motions, there would stand a perpetual seed-bed of discords and quarrels among the faithful of Christ in the celebration of the most holy Easter, on account of the variety and discrepancy of the astronomical tables and the different hypotheses of the motions — since some would contend that these tables should be followed, others those: just as today we see some employ the Alphonsine Tables, others the Prutenic, in ascertaining the motions of the stars. From this it would follow that different people would observe different equinoxes and new moons, and thus would celebrate Easter at different times — which would be very discordant and absurd.

[Margin: Second reason. Lest a perpetual seed-bed of quarrels and discords be stirred up in the Church, if the true motions were observed, on account of the variety of the astronomical tables.]

Thirdly, because down to this day no tables have been drawn up by the astronomers by which the true motions of the stars can be inquired into and known for all time, certainly and without any error; but each has always made tables agreeing with the observations of his own time, which afterward, when a long time had elapsed, were found to have fallen away from the truth — because not even the period of a single celestial motion has yet been exactly and thoroughly known. For Ptolemy [Ptolemy], the prince of astronomers and most skillful investigator of the celestial motions, drew up — some 1450 years ago — tables agreeing with his observations, by which at that time the motions of the heavens were reckoned most certainly and beyond all doubt. To these, since experience had taught that they no longer exhibited the celestial motions accurately, there succeeded other tables called the Alphonsine, which were drawn up by astronomers at the expense and by the diligence of Alphonso, king of Spain [Alfonso X], about 340 years ago, and by which at that time the motions were found more certainly than by Ptolemy's tables. In their place, finally, there have been substituted in our own time the tables of Copernicus [Copernicus], commonly called the Prutenic, because by the nearly universal consent of astronomers they agree far more exactly with the celestial phenomena than the Alphonsine. And so perhaps, after many ages, our descendants will observe other periods of the celestial motions, and will therefore frame new hypotheses, and even substitute other new tables for the Prutenic. For who can [say] for certain

[Margin: Third reason. Because up to this day no tables have been constructed that would exhibit the true motions without error, for many years.] ...[for who] would dare to affirm with certainty that the Prutenic Tables [tabulæ Prutenicæ] will forever agree with the motions of the heavens, when he sees that the tables

of Ptolemy [Ptolemæus] — that most excellent astronomer, deservedly ranked ahead of all others — are now defective and imperfect, though in his own day they were as accurate as could be? All the more so, since the Prutenic Tables rest on hypotheses that are uncertain, indeed absurd, at odds with the common opinion of mankind, and contradicted by all the natural philosophers. Add to this that not even one complete period of the anomaly of the precession of the equinoxes — on which Copernicus [Copernicus] founds the whole inequality of the solar year — has yet run its full course. One may therefore reasonably doubt the reliability of tables built up from that anomaly, and question whether, once one period is complete, the next will correspond to the previous one in every respect.

[Margin: The Prutenic tables, which today are used by everyone, why they may be judged uncertain.]

Since this is so, who will be so brazen and bold as to bind God's Church to astronomical rules and tables so uncertain and deceptive? No one, I think — unless perhaps you mean to say that the Church ought to embrace now these tables, now those, according as it observes them to fit the motions of the heavens at one time or another. But that would be nothing other than to throw everything into doubt, since the astronomers themselves scarcely agree on which tables are more to be trusted. We see this even in our own age: there are most excellent mathematicians who hold that, for the motion of the Sun and Moon, the Alphonsine Tables [tabulæ Alphonsinæ] are more to be believed than the Prutenic.

[Margin: On the astronomical grounds on which some hold that, for the motion of the Sun and Moon, the Alphonsine tables are more to be trusted than the Prutenic.]

Tycho Brahe [Tycho Brahe], a certain Danish nobleman and distinguished mathematician, who now examines the motions of the stars by his own observations and is wholly devoted to presenting them to us as accurately as possible, found — with careful diligence, in the year 1586, as I learned from that learned man, most skilled in mathematics, Bartholomäus Scultetus [Bartholomäus Scultetus] — that the vernal equinox, that is, the Sun's entry into Aries, occurred on 10 March, at 9 hours 2 minutes after noon, according to the old Calendar. The Alphonsine Tables put it very nearly six hours earlier, the Prutenic almost thirteen hours later. Here it plainly appears that the Alphonsine reckoning comes closer to the observation just cited than does the Prutenic (or Copernican). By the new Calendar, that same observed equinox falls on 20 March, at 9 hours 2

minutes after noon, and so was rightly assigned to the following day, the 21st. From this too it is clear, and evident, that in this correction of the Calendar it was excellently done to remove ten days from the year 1582, so that the equinox might be restored to 21 March.

[Margin: That ten days were rightly removed in order to restore the equinox to the 21st day of March is confirmed by the observations of a certain noble Dane.]

Therefore, in order that this discord and disagreement among the astronomers might be removed from the midst, the Church, with the most prudent counsel, has always refused tables of the true motions — leaving them to the curiosity of the astronomers — and has judged that the mean motions, which are equal and uniform, or rather cycles that best agree with the mean motions, should be employed for the solemn observance of the movable feasts.

Yet I have not brought these things forward with the idea that astronomical tables should be rejected altogether as false and worthless. On the contrary, I have always held the astronomers worthy of every praise — men who at various times, with the greatest labor and study, observed the motions of the stars, and, in order to compute those same motions readily (though not with perfect exactness, yet so as to depart little from the truth), worked out various tables with admirable industry and handed them down to posterity. My sole contention is that the Church ought not to be bound to the fastidious subtleties of the astronomers, since the same tables cannot last long, but different ones must be adopted from time to time as circumstances change, as I have said. Nor does this detract at all from the dignity and excellence of astronomy, that most noble science; rather, it wonderfully commends it, that it has set before our eyes so great a variety of motions so accurately that we come as near as possible to the truth itself. And what wonder that the astronomers cannot grasp perfectly, by their understanding, the motions of the heavens, which lie at so great a distance from us — when the philosophers have not yet been able to attain complete knowledge of even a single substance, however small, here in this lower world?

[Margin: That great astronomical tables ought to be made, even if they cannot last a long time.]

[Margin: Whence the inconstancy of astronomical tables arises.]

And indeed it seems to me that God, Best and Greatest, the most wise architect of the heavens and the stars, deliberately willed to wrap the motions of the planets and stars in such great difficulties that no mortal could unravel and explain them by his own wit. For who, from the founding of the world down to our own times,

has been found so excellent in astronomy as to define the periods of the celestial motions so exactly that, after some centuries of years, they would depart nothing from the truth — given the minute quantities, some in excess and some in deficit, in the period of each planet, which over a great interval of time introduce no slight error? And this is so, no doubt, that we may always find something to admire in the workmanship of these most noble bodies, so wonderful, and in the harmony and concord of their motions, so constant, and may celebrate their Creator and Mover with perpetual praise. Above all, it may be supposed to have been written of the immense mass of the heavens, their order, and their motions — in which there always seems to remain something for the most diligent searchers into celestial things to investigate — what Ecclesiastes says at chapter 3: *And he has delivered the world to their disputation.* This, doubtless, so that men might not at some time — had they perfectly understood the number, order, and motion of the heavens — cease to inquire into and admire the works of God, and so that their minds, deprived of any occasion for exercise, might not grow torpid, as it were, from inactivity.

Fourth, the Church disregards the true motions and takes up the mean ones, or rather cycles, because even if astronomical tables existed that were perfectly accurate and cleansed of every error, so as to be free of all fault, it would nonetheless be pointless, and without any necessity, to employ that exact and painstaking computation of hours and minutes according to the true motions in celebrating the movable feasts. For however accurately the vernal equinox and the Paschal full moons might be computed from the true motions, the variety of regions and meridians would still render that labor useless and vain. When, for example, the vernal equinox falls at Rome at noon on 21 March, it falls for certain more easterly peoples on the same 21st at sunset, and for others at the following midnight of that day, so that it will have to be assigned to the next day, the 22nd — and so on. Likewise, if the true full moon then occurs at Rome around noon on 21 March, the same will happen among the more easterly peoples at sunset, and among those still farther east around midnight, and so forth. Hence, if in that year 22 March were a Sunday, Easter would indeed be celebrated at Rome according to the ordinances of the Fathers and the Council; but among the more easterly peoples it could not be celebrated, because — being more remote — they must look to the true motion, since for them the equinox falls on the 22nd and the time of the full moon has not yet come. Now it is established from the decrees of the Fathers that Easter cannot lawfully be celebrated on the very day of the equinox, but that it is necessary that the

[Margin: **Fourth reason.** Because even if the astronomical tables that existed were perfectly accurate, the true motions would still be adopted in vain by the Church, on account of the variety of meridians.]

CAPUT QUARTUM

day of the equinox precede it, and that it be celebrated neither before the full moon, nor on the 14th of the Moon [Luna XIII], nor before the 14th. And since it was decreed in the Council of Nicaea that all should celebrate Easter in the same month and on the same day as the Roman Church observes it — a decree afterward confirmed in the Council of Arles [Concilium Atelatense] and the fourth Council of Carthage, and most clearly asserted by St. Ambrose [S. Ambrosius] in many words in his letter to the bishops appointed throughout Aemilia — it is plainly gathered that the Church cannot take account of the true motion of the luminaries in the celebration of Easter.

Fifth, on account of that most ancient custom by which the mean motions, or rather the cycles, have always been in use in the Church, the true motions being set aside — a custom that ought not to be changed without some pressing necessity. For that the Church has not observed the vernal equinox according to the true motion is clearly shown by the decree of the holy Fathers issued in the Council of Nicaea, whereby they ordained, for the whole world, that the equinox was to be observed on 21 March. But it is plain that the equinox can be tied and fixed neither to the true motion nor to a single mean day. For if, in the year immediately preceding a leap year, it falls on the 21st, it necessarily falls on the 20th in the following leap year, on account of the intercalary day added to February. Likewise, if in one leap year the equinox is about noon of some day, the same will necessarily fall, in the year immediately following the leap year, at sunset of that day; in the second year after the leap year, about midnight; and finally in the third year after the leap year, at sunrise of the next day — on account of those six hours which are omitted in each common year, since in those years only 365 whole days are counted, though nearly six hours are left over in each year. From this it is plainly concluded that the said decree can be referred neither to the true nor to the mean motion, but only to 21 March, the time at which the equinox used to occur — even if by astronomical calculation it was sometimes found to happen a little before or a little after that day. This was so that the equinox should not be observed by some on the 21st, and by others on another day if they chose to consult astronomical tables, and Easter thus be celebrated at different times — which would be absurd.

[Margin: **Fifth reason.** Because it is the most ancient custom of the Church to observe the mean motions, not the true ones — a custom that ought not to be changed without pressing cause.]

Nor does it greatly matter, as regards the solemnity of Easter, whether the equinox falls on the very 21st of March, or precedes it, or follows it, provided it is not far from it. For the Church was never bound to such precise and subtle rules of the astronomers — since not even the Hebrews themselves, for whom everything was ceremonial, were commanded to observe the true or the mean equinox in the solemnity of the Passover, but only the time at which the days, by the judgment of the senses, become equal to the nights — a period of three or four days, which the equinox is wont to span without any great difference.

[Margin: That it makes little difference, as regards the feast of Easter, whether the equinox does not always fall on the very 21st day of March, but sometimes precedes or follows it by some amount.]

This is gathered clearly enough from Sacred Scripture. For God commands the celebration of the Passover through Moses [Moyses] in Exodus 12, in these words: *This month shall be to you the beginning of months; it shall be the first among the months of the year*, etc. And a little later: *And you shall keep it* (the lamb, that is) *until the fourteenth day of this month*, etc. Here these words, *this* and *of this*, are repeatedly stressed, by which it seems to be signified that God did not wish to change the accustomed form and numbering of the year and months of the Hebrews, but only to change the seventh month into the first — as if it were said: This month, which hitherto in your Egypt, according to the common usage of the year (and not according to astronomical calculation), has been held and named the seventh, shall henceforth be to you the first of the whole year, and in it you shall celebrate the Passover. Nor can it be said that the true magnitude of both years — the solar as well as the lunar — was then unknown to Moses, instructed by God, for that would be absurd. Rather it must be said that Moses spoke to the understanding of the common people, who were ignorant of astronomy, since he was addressing the whole assembly of the children of Israel. And that he named the first month not in the astronomical manner — namely, when the Sun enters the first point of Aries — but in a wholly common and rustic fashion, that is, *Abib* in Hebrew, and ἀβίβ [Greek: abíb] in Greek, which in Latin means "the month of new things," or of the new crops, since in springtime the new crops are gathered in Egypt.

[Margin: That God, through Moses, commanded the observance of the first month, and of the 10th day, and of the 14th, in a rustic manner, accommodated to the understanding of the whole people of Israel.]

Now, that the Church labors little over the true or the mean motion even in investigating the new moons and full moons can be established from this: that in searching them out it has, from the very beginning, always used lunar cycles, that is, nineteen-year cycles, which can in no way agree in every respect with the true or the mean motions. For according to the cycles, the lunations comprise whole days, whereas both by the true and by the mean motion they contain, beyond the whole days, some hours and fractions of hours. I add that in leap years the lunations come one day later in the cycle after the intercalary day, an adjustment that cannot be taken into account until many years have elapsed, as will appear in Book 2, when we expound the reckoning of the golden number. And indeed, as regards the lunar cycle, the Church in this matter imitates not only the Hebrews, Alexandrians, and Romans, but also the Chaldeans, Arabs, Athenians, and the peoples of nearly every age — all of whom, both long before the coming of Christ and afterward, used lunar cycles to search out the new moons — all of whom Paul of Middelburg [Paulus Middelburgensis] expounds in Book 2 of his *Paulina*.

[Margin: That the Church is not greatly concerned about the true or mean new and full moons, since in investigating them it has always used cycles.]

[Margin: That the Church, in employing the lunar cycle, imitates all antiquity.]

Sixth, finally, the same is confirmed by the authority of many astronomers, and of all who have written on matters pertaining to the Roman Calendar according to the custom of the Church. Chief among them is Campanus [Campanus], at the beginning of his greater *Computus*, where he asserts that the *Computus* is the science of the numbering and division of times (I use his own words) according to common observances, etc.; at chapter 15 he teaches that the computists, having left the true lunations to the astronomers on account of their difficult variability, have concerned themselves only with the mean ones, on account of their uniformity.

[Margin: **Sixth reason.** Because various writers and computists testify that it ought to be done thus.]

Johannes Stöffler [Ioannes Stoflerinus] too, in his *Roman Calendar*, proposition 34, at the capital letter Z, teaches that the universal Church, from the Council of Nicaea down to the present day, has employed for the celebration of Easter the cycle of the golden number received from the Alexandrians, who had used it

earlier. And a little further on he affirms that the golden numbers inscribed in the Calendar indicate the days of the mean conjunctions of the luminaries, etc. And somewhat later he writes that the Orthodox Church, especially the Latin, before the Nicene Synod, in seeking out Easter by the 14th of the Moon, used the customary lunar cycle instituted by Julius Caesar [Iulius Cæsar]. He repeats the same in many other places.

Paul of Middelburg likewise, Bishop of Fossombrone [Episcopus Forosempronienensis], in his *Paulina*, Book 10, about the middle, a little before the table of equinoxes, after a long disputation on the varying and unequal magnitude of the year, writes in these words: *Nevertheless, this varying quantity of the solar year does not hinder our work, undertaken as a norm for the Paschal solemnity, because the Roman Church in its Paschal computation does not observe the varying or extreme motions, on account of their variability, but only the mean and uniform ones. Now the mean quantity of the year, between the greatest and the least, is 365 days, 5 hours, 49 minutes, 16 seconds, &c. [S. &c. 16.]* And he adds at once: *Wherefore, setting aside this scruple of the equation of the solar year, which is necessary for astronomers, we here set down the vernal equinoxes for the first month and Paschal norm, computed according to the reckoning derived from the Alphonsine Tables, etc.*

[Margin: That the mean motions are useful for judging which cycle, out of several, more correctly displays the 14th of the Moon in the Calendar.]

From all this I believe it is sufficiently confirmed that neither the day of the vernal equinox nor the Paschal 14ths of the Moon should be examined by ephemerides and astronomical [tables] of the true or mean motion — as some vainly contend — but that it is enough if they are sought by the popular rules, easy to grasp and still in use in the Church, of which sort are the cycles. I would not, however, deny that the mean motions drawn from astronomical tables — not the true ones (since the latter are unequal, the former equal) — are of the greatest use for judging which cycle among all those arranged in the Calendar most correctly displays the Paschal 14ths of the Moon.

What method of intercalation has been employed, so that the equinox may be kept near 21 March, to which it has been recalled.

CAPUT V

Lest the vernal equinox, with the progress of time, again desert 21 March, to which it has been recalled, and move back toward the beginning of the month, this method of intercalation was established before the correction of the Calendar: that, while the customary rule of intercalating one day every fourth year is indeed retained, not all the hundredth years shall henceforth be leap years (although by the customary rule of leap years they all ought to be leap years); but the first three hundredth years after the year 1600 shall be made common, that is, of only 365 days — such as the years 1700, 1800, 1900 — while the fourth following hundredth year, that is, 2000, shall be a leap year, of 366 days. Likewise the next three hundredth years, 2100, 2200, 2300, shall be made common in the same way, and the next hundredth year, 2400, shall be a leap year. And so on thereafter, the same order being always kept. Since the reasoning of this intercalation is sharply attacked by Maestlin [Michael Mästlin], it must be explained here somewhat more fully, so that all may understand that no other, more convenient method of intercalation could have been devised, and that this one is impugned by Maestlin cunningly and maliciously. And that this may be made plainer, a few things must first be said about the varying magnitude of the year found by the astronomers at different times. And to take our beginning from this: the solar year is twofold — astronomical and civil.

[Margin: What method of intercalation has been employed, so that the equinox may be kept near the 21st day of March.]

[Margin: What the astronomical year is.]

The **astronomical year** is the space of time in which the Sun by its proper motion traverses the whole Zodiac from west to east, beginning from some fixed point — as from the beginning of Aries — until it returns to the same point. This span of time comprises, beyond 365 whole days, 5 hours, and in addition some minutes of an hour, as sufficiently appears from the observations of the astronomers.

[Margin: That the astronomical year consists of days and hours, and fractions of hours.]

The **civil year** consists only of whole days: sometimes of 365, and it is called Common; sometimes of 366, and it is called Bissextile, or Intercalary. Nor can the civil year be reckoned otherwise than by whole days, the hours and fractions of hours being neglected, since it must be arranged for the use of the people and the common folk — who reckon not by a numbering of days together with hours, but only by whole days, without the small fractions of hours. Such a reckoning of the year could not be laid out in a Calendar, nor would it be suitable or accommodated to carrying on trade and commerce and other civil affairs, nor to keeping the feast days and duly performing the sacred ceremonies of the Church — because a year counted in that way begins its start-point now from noon, now from sunset, now from midnight, now from sunrise, and now finally from some other moment of the day; whereas in a Calendar only whole days, not the small fractions of hours, are set down. For example, the year 1588, if account be taken of hours and minutes, begins, according to the Ephemerides of Giovanni Antonio Magini [Ioannes Antonius Maginus], on 20 March, at about 9 hours 49 minutes after noon. The next year, 1589, on 20 March, at about 15 hours 36 minutes after noon. The year 1590, on 20 March, at 21 hours 31 minutes after noon. The year 1591, on 21 March, at about 3 hours 28 minutes after noon. And finally the year 1592 takes its beginning again from 20 March, at about 9 hours 23 minutes after noon. Here you see that the year never begins at the same moment of time — a thing that can in no way be suitable for the use of the people, unless we should wish all to be instructed in astronomy, which is both ridiculous and altogether impossible.

[Margin: What the civil year is.]

[Margin: That the civil year necessarily consists of whole days.]

[Margin: That the astronomical year does not always begin from the same moment of the same day.]

And although this reckoning by days, hours, and fractions of hours cannot, as we have said, be applied to common use, knowledge of it is nonetheless necessary, so that the civil year, consisting of whole days, may from time to time be equalized — now by the addition, now by the subtraction, of one day (which is made up from the omitted hours and their fractions) — so that it may agree, as far as possible, with the astronomical year, and the Sun may bring about the equinoxes and solstices at nearly the same times of the year.

[Margin: That knowledge of the astronomical year is necessary.]

For this reason the Church, every fourth year, by the institution of Julius Caesar, intercalates one day...

is added to the year, so that it becomes one of 366 days, while the other three preceding years comprise only 365. For since the Church, following the reckoning of Julius Caesar [Iulius Caesar] that is most widely received, sets the astronomical year at 365 days and 6 hours, whereas the civil year contains only 365 days, it follows that in the first civil year 6 hours are wanting to complete the astronomical year, in the second 12, in the third 18, and in the fourth 24 — which make up one full natural day. It is therefore necessary, so that those 24 hours are not lost, to make the fourth year one of 366 days. Otherwise the equinoxes and solstices would then fall one day earlier than they are marked in the calendar; after another four years, two days earlier; and so on, so that within 120 years they would slip back by a whole month — that is, by a full 30 days — toward the end of the year, and so forth, and would not return to their former places until after 1460 years. In that span of time the vernal equinox would run through every month, and indeed every day, in a complete cycle. Who does not see what confusion of the seasons this would bring?

[Margin: Why every fourth year is bissextile.]

[Margin: If all years were common, the equinox would traverse every day of the whole year in 1460 years.]

But since astronomers have observed the solar year to be somewhat shorter than 365 days and 6 hours, the result is that more is intercalated every fourth year than ought to be, because the hours and fractions by which the astronomical year exceeds the civil do not grow, in four years, into one whole day. Therefore, unless account is taken of those fractions which in each four-year period fall short of completing a whole day — so that, once they have grown into a whole day, one day is removed from the year (that is, the intercalation is omitted once) — the equinoxes and solstices will gradually advance toward the beginnings of the months, as happened before the correction of the calendar. To prevent this from happening in the future, this remedy has been devised: that some year which ought to be bissextile is instead made a common year of 365 days, and not an intercalary one of 366, as will be explained more fully below. But so that we may determine over how many years the fractions of hours — those wanting to complete the six hours in each astronomical year — make up one whole day, and thus one intercalary day ought to be omitted, we must consider carefully and diligently what has been handed down to memory concerning the length of the year through the observations of the more celebrated astronomers.

[Margin: Why the intercalation of one day every fourth year is greater than it ought to be.]

Setting aside, then, the more ancient astronomers: Ptolemy [Ptolemaeus], about the year 130 after the birth of Christ, found from his observations that the length of the year was 365 days and 6 hours less a three-hundredth part of one day — that is, beyond the whole days, 5 hours, 55 minutes, 12 seconds.

[Margin: The length of the year according to Ptolemy.]

Al-Battānī [Albategnius], about the year of the Lord 880 — that is, roughly 750 years after Ptolemy — found the year to contain 365 days, 5 hours, 46 minutes, 24 seconds.

[Margin: The length of the year according to al-Battānī.]

The Alphonsine Tables [Alphonsinae tabulae], drawn up about the year of the Lord 1250, establish that the year consists of 365 days, 5 hours, 49 minutes, 16 seconds.

[Margin: The length of the year according to the Alphonsine tables.]

These are the more celebrated opinions concerning the length of the solar year. From them it is clear that the solar year is now greater, now smaller, since it has been observed by the most skilled astronomers to be different and variable at different times. The ancient astronomers indeed were led by quite probable conjecture to suspect that the solar year cannot always be of the same length — both on account of the apparent unequal and irregular motion of the Sun, and on account of the irregular motion of the eighth sphere [sphaera octava]. But since this matter cannot be fully known except after many centuries have elapsed, they have left us nothing certain about the inequality of the solar years.

[Margin: That the solar year is not always of the same length.]

One man alone within human memory, Nicolaus Copernicus [Copernicus], the outstanding mathematician of our age, comparing his own observations most diligently with those of Hipparchus [Hipparchus], Ptolemy, al-Battānī, and Alphonso [Alphonsus], ventured — with truly incredible skill, and employing new hypotheses — to demonstrate this increase and decrease of the solar year, and to reduce the year's inequality to a certain and definite standard. By a calculation drawn from his hypotheses he found that the solar year, when it has grown to its greatest length, is a little greater than the one Ptolemy determined — namely 365 days, 5 hours, 55 minutes, 37 seconds, 40 thirds; and when it has most decreased,

a little smaller than the one al-Battānī found — that is, 365 days, 5 hours, 42 minutes, 55 seconds, 7 thirds — so that the length of the Alphonsine year is very nearly midway between the greatest and the least length of the year. Concerning this inequality of the years we shall write more in the following chapter.

[Margin: Copernicus's observations on the inequality of the year.]

Since this is so, it was truly difficult for Gregory XIII [Gregorius XIII], that most prudent Pontiff, to determine what method of intercalation he should prescribe so that the vernal equinox might be kept on the 21st of March. For the length of the Ptolemaic year required that about every three-hundredth year one intercalary day be omitted, because that year is smaller by a three-hundredth part of one day than the Julian or ecclesiastical year of 365 days and 6 hours, and therefore in the space of three hundred years the equinox would be advanced by one day toward the beginning of the month from the seat assigned to it in the calendar. But according to al-Battānī's year one intercalary day would have to be omitted about every hundredth year, since in so great a span of years the equinox of that year anticipates its own seat in the calendar by nearly one day. Finally, if the Alphonsine year were adopted, the intercalation of one day would have to be suspended once in the space of about 134 years. And this variety of intercalation would keep increasing in proportion as the length of the year turned out variously between the greatest and the least year. Which way, then, was the Pontiff to turn, or what path should he set himself to follow?

[Margin: The difficulty of intercalating so as to keep the equinox on the 21st of March.]

[Margin: In how many years one intercalary day would have to be omitted once, if the Ptolemaic year were reckoned.]

[Margin: In how many years, according to al-Battānī's year, the intercalation would have to be suspended once.]

[Margin: In how many years the Alphonsine year requires the removal of one intercalary day.]

Two methods above all were proposed to him by the eminent astronomers in charge of this business. The first was that, in keeping with the inequality of the solar year, one intercalary day should be removed now at a greater interval of years, now at a smaller, according as the year turned out greater or smaller by Copernicus's calculation. The second was that, setting aside the year's inequality, the method of intercalation should be fitted to the Alphonsine year, which is in a

manner intermediate between the greatest and the least. Both methods were sent, in a compendium of the new scheme for restoring the calendar, to the Christian princes, the commonwealths, and the more famous universities, so that, after the matter had been carefully, long, and thoroughly considered, they might deliberate which of the two seemed the more suitable and fitting, in order that the Supreme Pontiff might approve it by his authority as, so to speak, the consensus of the whole Christian world. But when all of them, with at most one or two exceptions, had left the whole matter to his...

judgment, this latter method was at length chosen, on the advice of the astronomers, chiefly for the following reasons.

[Margin: By what method the intercalation was chosen, and for what reasons.]

First, since in the celebration of Easter the Church ought to follow something regular and uniform — something fixed and not far from the truth — rather than the exact computation of the astronomers (because the measures of years, months, and other periods of time ought to be adapted to the understanding of ordinary people), the first method of intercalating seems in no way to be adopted, because it is uncertain, irregular, and unequal, being one in which at one time the intercalary day would have to be omitted after more years, at another after fewer. And what would this be but to cast the whole Christian people into inextricable snares, since they would be perpetually doubtful and uncertain as to when the intercalary day was to be omitted?

[Margin: First reason.]

[Margin: Why in the correction of the calendar the mean magnitude was adopted.]

Nor can it be said that the Church ought to set before the people a table of intercalation in which are listed the years in which the intercalation is not to be used: for among the astronomers a blaze of discord and of intolerable disturbances would be kindled, since each would force his own calculation upon this business, seeing that (as we said in the previous chapter) one contends that these tables are to be adopted, another those.

[Margin: That an unequal year is not suitable for establishing the intercalation.]

For, I ask, for what other reason did so many dissensions and disputes over the celebration of Easter arise between Greeks and Latins, from the Council of Nicaea down to the time of the Emperor Justinian [Iustinianus], except that in that Council those most holy Fathers did not propose any fixed cycle for the whole

Church to observe, but entrusted the care of it to Eusebius, Bishop of Caesarea [Eusebius Caesariensis], and to the Alexandrians?

[Margin: Whence arose the disputes over the celebration of Easter from the Council of Nicaea to the Emperor Justinian.]

Hence it came about that the Latins contended Easter should be celebrated according to one cycle, and the Greeks according to another, until, in the time of Justinian the Elder, Dionysius the Abbot [Dionysius Exiguus] inscribed the cycle of the Alexandrians in the Roman calendar, which all the churches thereafter followed with concordant minds — as indeed was done both by the Eastern Church and by the Western, down to this Gregorian correction. Therefore, had Gregory XIII, that most prudent Pontiff, not prescribed some equable and regular formula of intercalation, but left the care of it to the astronomers, to draw up from the true motion tables listing the years in which the intercalation was to be suspended, who does not see that there would have been perpetual quarrels and dissensions among the astronomers, each forcing his own calculation upon the Church? One single, definite length of the year therefore had to be chosen, so that the scheme might be established in accordance with it, by which the intercalation would be suspended at a certain fixed interval of years. For in this way both the common and unlearned people are better served, and all material for discord among the astronomers is utterly removed.

Since, then, the year is unequal — greatest, least, and mean — the greatest cannot be adopted for this purpose, because the intercalation would be omitted too rarely, that is, only once every three-hundredth year. And although this method, at the time when the year had grown to its greatest length, would answer exactly to the motion of the Sun, it would nonetheless differ most from the truth when that same year had its least length.

[Margin: Why the greatest year is not suitable for the equation of the solar year.]

For the same reason neither can the least year be suitable for this purpose, because it demands too frequent an omission of the intercalary day, and would answer to the motion of the Sun only at the time when the least year was being completed.

[Margin: Why the least year is not suitable for the equation of the solar year.]

Therefore only the year midway between greatest and least — such as the Alphonsine is — will be fit for this office. For whether the year is found to be greater at some time, or smaller than the mean, we shall be able to depart but

little from the truth, if we set the omission of the intercalary day according to the magnitude of that mean year, since the intercalary day is then removed from the reckoning neither too rarely nor too frequently, but a certain mean rule is always preserved — so much so that this method of intercalation corrects and amends itself. For when the intercalary day is omitted more frequently than is fair at one time, this error is compensated at another time, when the intercalary day is removed more rarely; and vice versa.

[Margin: Why the mean year, that is, the Alphonsine, is alone suitable for equating the solar year.]

[Margin: How the method of intercalation established for the mean year corrects itself.]

This will be evident from the calculations of several years at the end of Chapter VI, where it will appear clearer than daylight that an equable equation can be established only for the mean year, and not for the least or the greatest: for the equations of these [extreme] years drive the equinox far from its proper place after some years, whereas the equation of the former — that is, of the mean year — keeps it about the same 21st day, which is its proper seat, so that it cannot stray far from it, even over many thousands of years.

Nor can any other inconvenience (if it can be called an inconvenience) follow from this omission of the intercalation, established according to the mean length of the year, than that in the greatest year we remove the intercalary day sooner than is needful — and so the equinox recedes a little from the 21st of March toward the end of the month, and the ecclesiastical equinox, fixed to the 21st, falls before the true one; while in the least year we omit the intercalary day later than is fair, and accordingly the equinox leaves [deserat] the 21st of March and advances toward the beginning of the month, so that the ecclesiastical equinox falls after the celestial, or true, one. That this is not absurd, but rather most consonant with the custom of the Church, will be understood from what follows.

[Margin: That no inconvenience of any moment follows from the intercalation established for the mean year.]

Secondly, this latter method has been the more approved because — as we shall prove by many arguments in the next chapter — the Church has always used the mean motions in investigating the new moons and the fourteenth moons [Lunas XIII] for the correct determination of Easter, leaving the true motions to the more exact scrutiny of the astronomers; for the mean motions are always equal and uniform, whereas the true ones are unequal and irregular, now greater than

the mean, now smaller. It seems fitting and consistent, therefore, that for keeping the equinox in its seat the Church should also employ the length of the year that is mean between the greatest and the least. For just as the mean conjunctions of the luminaries now precede the true conjunctions and now follow them, so too the equinox which the year midway between greatest and least exhibits will at one time precede [the true equinox], the true one following; and at another time fall after the true one, as we said a little earlier.

[Margin: Second reason.]

[Margin: Why in the correction of the calendar the mean magnitude of the year was adopted.]

[Margin: The likeness between the mean conjunctions of the luminaries and the equation established for the mean year.]

But if someone should object that, from the fact that the true equinox does not always fall on the 21st of March (where the Church has placed it) but sometimes before and sometimes after, it necessarily follows that some fourteenth moons belong to the first month and are Paschal by the decrees and ordinances of the Fathers and of the Council of Nicaea, and...

and yet that these are rejected as non-Paschal and as belonging to the last month, because they occur before the 21st of March, on which the Church supposes the equinox to fall — even though those fourteenth moons occur before the actual day of the equinox (which then perhaps precedes the 21st), or even follow it; and again that some fourteenth moons are not Paschal by the same decrees and ordinances of the Fathers and of the Council of Nicaea, but belong to the last month, and yet are reckoned by the Church as legitimate for celebrating Easter and as belonging to the first month, because they fall on the 21st of March, appointed to the equinox, or follow it, even though they precede the true equinox (which then perhaps occurs after the 21st) — both of which seem absurd, since the former fourteenth moons throw Easter into the second month, while the latter present it for celebration in the twelfth and last month:

[Margin: An objection — that Easter is sometimes thrown into the second month, and sometimes anticipates the first month, because the equinox does not always stay on the 21st of March if the equation is set for the mean year.]

If anyone, I say, should object in this way, the answer is that this is neither absurd nor new in the Church of God.

[Margin: Resolution of the objection.]

For the equinox cannot be contained within a single day, but demands two days for itself. For if in some bissextile year it falls, say, on the 20th of March about noon, in the following year it will occur six hours later — namely on the 20th about sunset — on account of those six hours which in every year after the bissextile are dropped; then in the next year on the 20th about midnight, and in another following year on the 21st about sunrise; and finally in the next year, which is again bissextile, it returns to the earlier 20th day about noon, on account of the intercalary day added to the year.

[Margin: That it is nothing new for Easter to be celebrated sometimes in the second month, sometimes in the last, on account of the common and bissextile years.]

Since, then, the equinox requires two days, but the Church has always assigned a single day to the equinox — namely the 21st of March — so that all the faithful of Christ may everywhere celebrate Easter on the same day, that is, on the first Sunday after the fourteenth moon which falls either on the day of the equinox (the 21st of March) or next after it, but does not precede it (as we taught above), it could not be avoided at any time — not even in the days of the Council of Nicaea, when the Paschal Canon was first confirmed and issued by a general Council — that Easter should sometimes be celebrated in the last month, or in the second. This I shall make plain as follows.

Suppose that the equinox, around the time of the Council of Nicaea (which the Fathers fixed on the 21st of March), truly fell on the 21st and 22nd of March, as the tables of Copernicus, or the Prutenic Tables [Prutenicae], show us — in which we find that the equinox in the year of the Lord 324, a bissextile year, fell on the 21st of March about noon, and therefore in the third year after the bissextile on the 22nd about sunrise. This being granted, whenever, in that third year after the bissextile, the fourteenth moon fell on the 21st of March (which, while the golden number XVI was running, always happened before the correction of the calendar), Easter was celebrated in the last month, since that fourteenth moon preceded the equinox — and Easter fell on the equinox itself, if the 22nd then happened to be a Sunday.

[Margin: That Easter would necessarily have been celebrated sometimes both in the second month and in the last, even in the very days of the Council of Nicaea.]

Suppose next that the equinox, around the same time of the Council, occupied the 20th and the 21st of March, which agrees better with the Alphonsine Tables, since these place the equinox in the year 324, a bissextile, on the 20th of March about

22 hours before noon. If, I say, we accept this, then whenever at that time the fourteenth moon in a bissextile year fell on the 20th of March, Easter was thrown into the second month, although that fourteenth moon was truly Paschal — because it fell either on the equinox or after it — and yet the Church rejected it as belonging to the last month, for no other reason than that it preceded the 21st assigned to the equinox. The same must now, after the correction, necessarily happen whenever the epacts XXIII and XXIII are in use. For when the equinox falls on the 20th of March and the epact XXIII is running, the fourteenth moon of this epact — falling on the 20th of March — would be Paschal by the decrees of the Fathers and of the Council of Nicaea; yet it is rejected, and another, of the second month, is accepted. But when the equinox falls on the 22nd and the epact XXIII is running, the fourteenth moon of this epact, falling on the 21st, is taken as Paschal, although by the decrees of the Fathers it belongs to the last month, because it occurs before the equinox.

[Margin: That the Church does not conflict with the decrees of the Fathers and of the Council of Nicaea, even if Easter is sometimes celebrated in the last month or in the second, since this can in no way be avoided.]

From these things it plainly appears that it is nothing new in the Church for Easter to be celebrated either in the last month or in the second, on account of the equinox being fixed to a single day, which demands two days. Nor is the Church herein to be thought to depart from the decrees of the Fathers and of the Council of Nicaea; for those decrees are not to be taken so strictly as to require the Church to determine the equinox from astronomical tables, but are to be understood only as directing the Church, in the celebration of Easter, to observe the day ascribed to the equinox — even though the equinox may sometimes precede or follow that day, provided it does not recede far from it.

[Margin: That the equinox is twofold: astronomical, or true; and ecclesiastical, or political/conventional.]

Therefore it can rightly be said that the equinox can be taken in two ways: in one, as it truly exists in the nature of things and is considered by the astronomers; in the other, as it is fixed in the calendar to some certain day and is used by the Church for the due celebration of Easter. And although this ecclesiastical equinox ought to be referred, as far as can be done, to that astronomical and true one, yet for just reasons the one may differ somewhat from the other. The most just reason why the ecclesiastical equinox sometimes differs from the natural and true one is the concord and consensus of the faithful — for the sake of which the Church has ascribed the equinox to a single day, so that throughout the Christian

world all might, with united minds, keep the most holy day of Easter on one and the same day. This concord could scarcely, or only with difficulty, be preserved if the equinox, with account taken of the true motion, were bound to two or even more days, as is clear from what has been said. And so, although in the celebration of Easter the Church freely and of its own accord (for it is bound by no laws to do this) proposes to itself the observation of the equinox and of the course of the Moon — namely for the fuller unfolding of the mysteries contained in the most holy Passion and Resurrection of the Lord — nevertheless the peace and concord of the faithful is dearer to its heart; so much so that, if by any chance the concord of the faithful should suffer harm, it would rather have Easter celebrated by all on the same day, even if the equinox and the course of the Moon were not perfectly kept, than that the least agreement of the faithful in celebrating it should be broken or disturbed. For who would with justice reprehend the Church, or charge it with error, if it should deviate a little from the perfect observation of the equinox and of the fourteenth moon, so that tranquility and peace among the faithful might be preserved in the celebration of Easter, the most solemn of all feasts? For it considers the equinox and the fourteenth moon freely, and only on account of a certain congruence and likeness with the Passover of the Hebrews in this matter (as we taught in Chapter I); but the peace and concord of believers it is bound, by divine command, to protect and preserve.

[Margin: That the Church is free in observing the equinox and the course of the Moon for the celebration of Easter, but observes them for the sake of the mystery; that the peace of the faithful in the celebration of Easter is dearer to the Church than an exact observation of the equinox and of the course of the Moon.]

[Margin: Third reason. Why in the correction of the calendar the mean magnitude of the year was adopted. If after some years the equinox should abandon March 21, by what means it could be recalled to it.]

Finally, in this matter the Church has followed above all the *mean* year. For even though — on account of the omission of the intercalary day set up in proportion to the mean magnitude of the year — it might come about, after the passage of several centuries, that the equinox would not remain on March 21, but be found by new observations to have either slipped toward the end of the month or advanced toward its beginning (something we do not deny can happen, owing to the inconstancy and mutability of the astronomical tables): just as the tables of Ptolemy and of King Alfonso [Alphonsine tables] have by now been found to have deviated somewhat from the true motions — although in their own day, when

they were composed, they represented those motions most accurately — so likewise we cannot promise perpetuity and permanence for the Prutenic tables [tabulae Prutenicae] drawn from the doctrine of Copernicus. Even if, I say, the equinox were found to have moved from its seat, it can nonetheless be recalled to the 21st without any difficulty: by decree of the Roman Pontiff, one or another day — or even several, if need be — may be intercalated out of the ordinary course in some year, should it be found to have slipped toward the end of the month; or taken away from some year, should it have advanced toward the beginning — according, that is, to the number of days by which the equinox is observed to have receded from the 21st. For in this way it will be restored to the 21st, and on that account nothing in the epacts of the calendar will have to be altered: only the equations of the expanded table of epacts will have to be arranged a little differently. In what manner this ought to be done, we shall set out in Book 2, Chapter 4.

[Margin: In what the perpetuity and perfection of the Gregorian calendar consists.]

And it is in this that the excellence and perpetuity of the Gregorian calendar consists: that it can be fitted to any form of intercalation whatever — that is, to any magnitude of the year — with no change made in the calendar's Cycle of Epacts. This is something that can be made to square with no other Lunar Cycle; for once the manner of intercalation is changed, the disposition of the Cycle in the calendar must of necessity be changed as well, as we shall explain fully in Chapter 4 of the second book, when we treat of the expanded table of epacts. This Maestlin, sharp-witted man though he is, did not see; otherwise he would not have been so bold in finding fault with this calendar.

[Margin: That Maestlin failed to grasp in what the perfection and perpetuity of the calendar consists.]

For it is not the case that the Gregorian calendar has been called perpetual and liable to no alteration whatever because — as Maestlin falsely interprets it — such a formula of intercalation has been prescribed in it that by means of it the equinox is held fixed on March 21 in such a way that it can never at any time recede from it. This, in fact, can by no means be brought about, so long as a *civil* year composed of whole days, together with an easy and regular manner of intercalation (as is fitting) — and not an *astronomical* year made up of days, hours, and fractions of hours, with an irregular form of intercalation — is to be set before an untrained populace. For who is so stupid and dull, provided he has any tincture of astronomy, as to persuade himself of this, when daily experience

teaches us that not even within a span of four years, because of the six hours omitted each year, can the equinox stand on the same day?

[Margin: That it cannot be brought about that the equinox stay fixed on the same day, on account of the six hours omitted each year.]

[Margin: That the new calendar will remain untouched even if another method of intercalation be instituted, should posterity perhaps discover a different magnitude of the year.]

Rather, the calendar is said to be perpetual and liable to no alteration for this reason: that even if posterity should discover a different magnitude of the year — and therefore have to institute a different rule of intercalation in accordance with it (which we frankly admit can happen, on account of the year's uncertain and unequal magnitude; and it was for this very reason that, in the compendium of the restoration of the calendar, two formulae of intercalation were proposed to the Christian princes and to the mathematicians) — the calendar itself, as regards the disposition of the epacts, will nevertheless remain entirely untouched. This would not be the case had the golden number been left in the calendar, as many wished.

[Margin: That, had the golden number been left in the calendar, thirty calendars would have had to be composed.]

For then, not only if one form of intercalation after another were instituted for different magnitudes of the year, but even keeping always the same form of intercalation — namely, the one we have expounded according to the Alphonsine year — it would have been necessary to change the golden number in the calendar thirty times over, and therefore thirty different calendars (which would be intolerable) would have had to be composed, as will appear below.

[Margin: For what reason the intercalary day, being omitted in the centesimal years — every four-hundredth excepted — squares with the Alphonsine year.]

Therefore, since in this business of the correction the magnitude was chosen from the Alphonsine year — according to which a form of intercalation is instituted for keeping the equinox on the same day, as being more uniform and better suited to the common understanding — let us now explain in what way the omission of the intercalary day in every hundredth year after the year 1600 (every four-hundredth excepted), as was stated at the beginning of this chapter, squares with this magnitude of the year. For since, as we showed in Chapter 3, the equinox in about 134 years anticipates one whole day — so that, if it now

clings to March 21, after 134 years it will have advanced to the 20th — it follows that if the intercalary day were omitted in any given 134th year, by making the year now 132, now 136 (since the 134th year is not a leap year) a common year, that is, one of 365 days, and not a leap year (as it would have to be, were the Julian or ecclesiastical year neither greater nor less than 365 days and 6 hours), the equinox would be brought back to the 21st — just as, by the omission of ten days made in the year 1582 (the days by which it had departed from the 21st toward the beginning of the month), it was restored to that same 21st day. But since this variety, whereby the intercalation would have to be omitted now in some 132nd year, now in some 136th, could easily be forgotten — those years being marked by no conspicuous sign — the *centesimal* years were chosen for this purpose instead, since these are more prominent, and negligence or forgetfulness cannot so easily creep in with regard to them, especially because all the centesimal years are dedicated to Jubilees, and hence are exceedingly well known to and eagerly awaited by the sons of the Catholic Church. For since, as has been said, the equinox in 134 years anticipates one day, it will forestall its own seat in the calendar by three days in the space of 402 years.

Therefore, if in every space of four hundred years three intercalary days are omitted, this order being kept — that the first three centesimals after 1600 (for the year 1600 needs no equation, since in it, owing to the nearness of the year 1582 in which the calendar was corrected, the equinox could not yet have anticipated a whole day) be common years and not leap years, while every four-hundredth is made a leap year — the equinox will be preserved near March 21, exactly as if the intercalary day were omitted in every one-hundred-and-thirty-fourth year.

And so, although in future every fourth year is still, by custom, a leap year, nevertheless the years 1700, 1800, 1900 will not be reckoned leap years (although they are contained within the number of the leap years), but common years; while the year 2000 will be a leap year. In the same way the years 2100, 2200, 2300 will become common, and the year 2400 a leap year — and so on thereafter, always keeping the same order, until it has been ascertained that

the equinox has so departed from March 21 that it cannot return to it, save by a decree of the Supreme Pontiff for an extraordinary intercalation, or for the omission of one or several days in some year, as we showed above. As for the fact that we have neglected those two years which remain over and above 400, no one should wonder at it: for in many thousands of years they can scarcely produce an error of a single day, even if no account is taken of them; and this error, if it

should grow to a whole day, will easily be corrected by an extraordinary intercalation of a single day in some common year — that day then being restored to the year from which it was removed without necessity.

[Margin: A likeness between the intercalation to be applied every four-hundredth year and that applied every fourth year.]

You see, then, that this scheme of intercalation, instituted in the centesimal years, is very similar to the customary form of intercalation every fourth year, and can easily be kept in memory by the people. For just as every fourth year after the birth of Christ always was, and will be, a leap year, while all the other years are common, so after the year 1600 every four-hundredth year will be a leap year, while all the other centesimal years will be common. Likewise, just as among the non-centesimal years only those are leap years that four divides evenly — such as the years 20, 84, 1588, 3416, and so on — so too, after the correction, of the centesimal years only those will be leap years the number of whose hundreds four divides evenly, such as the years 1600, 2000, 2400, 3600, 9600, and so on. For four measures all these numbers of hundreds — 16, 20, 24, 36, 96 — as is plain.

[Margin: An objection: that the equation seems not rightly applied in the centesimal years, since it ought to be made in every 134th year.]

But someone will say: this omission of the intercalary day in the centesimal years is indeed exceedingly well suited to the grasp of the common people and to memory, yet it seems less fit for keeping the equinox on March 21. For since, in order to hold the equinox on the same day, one intercalary day must be omitted for each 134th year, in accordance with the magnitude of the Alphonsine year (as was shown above), it follows that in the equation, which proceeds by centesimal years, in the first centesimal the just and legitimate equation is anticipated, through the omission of the intercalary day, by 34 years; in the second centesimal, by 68 years; and in the third centesimal, by 102 years. And this does not seem to keep the equinox in its seat, but rather to drive it from it.

[Margin: A resolution of the objection: that the equation applied in the centesimal years does not obstruct the intercalation which ought to be made in every 134th year, but rather perfects it.]

Nevertheless, if we are willing to consider the matter a little more attentively, we shall understand that by this our equation — supposing the magnitude of the year were indeed exactly what the Alphonsine tables give us — the equinox is kept more correctly in its seat than if the equation were made in every 134th year. And this is plain as follows.

[Margin: That the equation applied in the centesimal years preserves the equinox on the same day in the very same way as it is preserved by the intercalation every fourth year.]

Let us suppose, for example, that the equinox falls in some year on March 21, six hours before sunrise — that is, at the midnight preceding. This posited, after $33\frac{1}{2}$ years it will forestall that midnight by six hours, and will fall about sunset of the 20th, since in 134 years it anticipates one day, and therefore in $33\frac{1}{2}$ years a quarter of a day, that is, six hours. And after 67 years, for the same reason, it will be found at midday of the same 20th. And after 100 years, at sunrise of the same 20th. Thus, after a span of 100 years, the equinox has receded from the seat first assigned to it, toward the beginning of the month, by three-quarters of a day, that is, by 18 hours. Now if in this hundredth year the intercalary day be not removed, but the 134th year be awaited, this recession toward the beginning of the month will grow to 24 hours, and the equinox will fall before the 20th, at midnight, before the day is removed in the 134th year; and this will always happen in every span of 134 years. But if in the first hundredth year the intercalary day be subtracted — even though the anticipation of the equinox has not yet grown to a whole day, but only to 18 hours — the equinox will be carried from sunrise of the 20th to sunrise of the 21st, and will stand six hours toward the end of the month from the point first assigned, and not 18 hours toward the beginning of the month. Then, in the second centesimal, when the equinox has first reached midday of the 20th, it is restored, by the subtraction of the intercalary day, to midday of the 21st, and stands 12 hours from its first seat. And in the third centesimal, when the equinox has now reached sunset of the 20th, it is recalled, by the removal of another day, to sunset of the 21st, and stands 18 hours from its first seat. Thereafter this distance is gradually diminished, until in the fourth centesimal it has been reduced by 18 hours (since in every hundredth year the equinox forestalls its seat by 18 hours), and therefore comes to rest once more at its former place, that is, at midnight before the 21st — in which case, at that hundredth year, the intercalary day is not omitted, but intercalated in the usual manner.

You see, then, that if one day were removed in every 134th year — which perhaps might seem to not a few to be expedient — the equinox would always be receding toward the beginning of the month from the seat assigned to it, so that this recession, near the 134th year, would grow to almost a whole day; whereas by our equation, instituted in the centesimal years, the distance of the equinox from its first seat cannot come to be 24 hours, but at most 18 hours. And therefore the

equinox is more correctly kept at the 21st if the equation is made in the centesimal years, than if the 134th year be awaited.

[Margin: That the equation applied in the centesimal years preserves the equinox on the same day in the same manner as the intercalation every fourth year.]

Add to this that our equation, applied in the centesimal years, not only conforms — as was said before — to the customary quadrennial method of intercalation, but the ratio in both is exactly the same, as regards the preservation of the equinox in the same seat. For just as in the first year after the leap year the equinox slips toward the end of the month by six hours; in the second, by 12 hours; and in the third, by 18 hours, on account of the six hours omitted in each of the common years; and finally in the fourth, by the intercalation of one day near the beginning of the year — without waiting for the full 24 hours to be completed — it is restored to the same seat: so too, in every space of four hundred years it comes about, if the first three centesimals be made common and the fourth be a leap year, exactly as is clearly established from what has just been said.

[Margin: That the Arabs, in the equation of the lunar year, follow almost the same method of intercalation.]

And what of the fact that the Arabs follow almost the same method of intercalation in the equation of the lunar year? For they never wait until a whole day is made up from the omitted hours; but whenever, from those hours, a number greater than 12 is composed, they institute an intercalary year, adding one day to the lunar year of 354 days — which they call an embolism — so that, namely, the lunar year may be equalized. On this matter one should read Campanus [Campanus of Novara] in the *Greater Computus* [*Computus maior*], and Paul of Middelburg [Paulus Middelburgensis], Book 2 of his *Paulina*. But that it may be more clearly perceived that no more convenient way of equalization, and none truer to fact, could be entered upon than the one we have explained in this chapter, we shall bring forward the arguments — or rather the cavils — of Maestlin against this method of equalizing the solar year. But first, in the following chapter, a few things must be explained somewhat more

carefully; namely, the whole period of the anomaly of the equinoxes and of the inequality of the years, according to the hypotheses of Nicolaus Copernicus. For from this it will most clearly appear both that the formula of equation we have prescribed is most apt, and that Maestlin, in attacking it, was thoroughly crafty and malicious.

ON THE PERIOD OF THE ANOMALY OF THE EQUINOXES, AND OF THE INEQUALITY OF THE YEARS, FROM THE DOCTRINE OF NICOLAUS COPERNICUS.

CAPVT VI.

Since, in order to overturn from the foundations the formula for equalizing the solar year explained in the immediately preceding chapter, Maestlin rashly asserts that the vernal equinox, if that formula be applied, will — not so very many thousands of years hence — slip from March 21 all the way to the 27th, and will return no more to the 21st; and adds, moreover, that the mean equinox at this time falls on March 23, and that the true equinox can depart from the mean, both by advancing and by receding, through a whole four-day span: I judge it worthwhile, in order to expose the madness of this prophet, and in keeping with the purpose of the *Apologia*, to set briefly before the eyes in this chapter both the true and the mean equinoxes throughout the whole period of the anomaly of the equinoxes and of the inequality of the solar years — drawn from the Prutenic tables, which among nearly everyone are now almost the only ones held in esteem, and out of which Maestlin fashioned and drew forth all his arguments. For thus the slanders which he here employs against the equation of the equinoxes prescribed in the new calendar will all be made manifest, and it will be made plain that the vernal equinox, with our formula of intercalation applied, does not recede from March 21 by so great a span as he — falsely, and out of a mere spirit of contradiction — prophesies that it will depart.

[Margin: When the period of the anomaly of the equinoxes began before the birth of Christ.]

And since Nicolaus Copernicus — from whose doctrine the Prutenic tables are constructed — laid it down that the period of the anomaly of the precession of the equinoxes is completed in a span of 1717 Egyptian years, which make up 1715 Julian years (those we now use) and 302 days, we shall divide this whole circuit and revolution into 8 chief parts: first indeed into four quadrants, and then each quadrant into two equal parts, so that the time of each of these eight equal parts embraces 214 years, 174 days, and 15 hours.

[Margin: In what year of Christ the period of the anomaly of the equinoxes is to begin again.]

Now this revolution of the anomaly had its beginning 63 completed years, 227 days, 20 hours, and 42 minutes before the birth of Christ; because in so great an interval of time the equal, or mean, motion of that anomaly completes the arc assigned by Copernicus for its Radix at the beginning of the years of the Lord — which Radix contains 0 signs, 6 degrees, 40 minutes, 27 seconds, 28 thirds, 6 fourths. If, then, to the 63 years, 227 days, 20 hours, and 42 minutes elapsed before the Nativity of Christ [CHRITI: for CHRISTI] there be added the 1715 years and 302 days of the whole circuit and revolution, we shall find that the same anomaly begins its revolution anew in the year of the Lord 1653, on the 25th of March according to the new calendar — whereas the beginning of the prior revolution had fallen on the 18th day of May, had the Julian year then been in use. Hence, by the continual addition of 214 years, 174 days, 15 hours, there will be gathered the years in which the same revolution occupies those eight parts of the whole period — as has been done in the appended scheme, in which two complete revolutions are set out.

[The lower half of printed page 24 is blank; the "appended scheme" (formula) referred to falls on the following leaf.]

Apologia against Maestlin — Book One, Chapter Six (continued)

On the period of the anomaly of the equinoxes [De periodo anomalix æquinociorum]

The following table gives, for each of the eight parts of the revolution, the years of the Lord in which the anomaly of the equinoxes stands there, together with the day and month of the equinox.

| When the anomaly of the equinoxes stands in each of the eight parts | Years of the Lord elapsing [Anni Domini Labentes] | Days [Dies] | Months [Menses] |
|---|---|-------------|-----------------|
| At the beginning of the revolution, or of the first quadrant. | 63. ante Christum natum expleto. & 1653. | 18. / 25. | Maij. / Martij. |

| When the anomaly of
the equinoxes stands
in each of the eight
parts | Years of the Lord
elapsing [Anni Domini
Labentes] | Days
[Dies] | Months [Menses] |
|--|---|----------------|------------------------|
| At the middle of the
first quadrant. | 151. & 1867. | 8. / 18. | Nouemb. /
Septemb. |
| At the end of the first
quadrant, and the
beginning of the
second. | 366. & 2082. | 2. / 13. | Maij. / Martij. |
| At the middle of the
second quadrant. | 580. & 2296. | 23. / 4. | Octob. / Septemb. |
| At the end of the
second quadrant, and
the beginning of the
third. | 795. & 2511. | 16. / 1. | Aprilis. / Martij. |
| At the middle of the
third quadrant. | 1009. & 2725. | 7. / 25. | Octob. / Augusti. |
| At the end of the third
quadrant, and the
beginning of the
fourth. | 1224. & 2940. | 31. / 16. | Martij. / Februarij. |
| At the middle of the
fourth quadrant. | 1438. & 3154. | 21. / 12. | Septemb. /
Augusti. |
| At the end of the
fourth quadrant, or of
the whole revolution,
and at the beginning
of a new revolution. | 1653. & 3369. | 25. / 2. | Martij. / Februarij. |

[Margin: When the true and the mean equinox occur in various ways [multifariam], and when they differ most from one another, and when their difference is intermediate.]

The true and the mean equinox, therefore, do not differ from one another but occur together, whenever the anomaly stands both at the beginning of its revolution and at the end of the second quadrant — that is, at the beginning of both the first and the third quadrant — because at those points the equation of

the precession is nil. The difference between the two equinoxes is greatest, however, when the anomaly, in the course of its revolution, occupies the end of the first quadrant and of the third, because then the equation of the precession is greatest. Finally, the difference between the two equinoxes is intermediate at the middle of each quadrant, because then the equation of the precession is in an intermediate state. And so, over the whole period of the anomaly, the two equinoxes coincide twice, twice the one differs from the other to the maximum, and four times their difference stands at a certain intermediate value.

[Margin: The tropical year, when it is longest, when shortest, and when it stands intermediate and at the mean.]

Again, the tropical or turning year is longest when the anomaly stands both at the beginning of its revolution and at its end — namely at the start of the first quadrant and at the end of the fourth. It is shortest when the same anomaly is set at the middle of its revolution, that is, at the end of the second quadrant or at the beginning of the third. At all the other positions of the anomaly it is intermediate. The cause of this variation is this: the precession of the equinoxes for a single year — which must always be subtracted from the equal sidereal year (which contains 365 days, 6 hours, 9 minutes, 39 seconds, according to the view of Thebit [Thābit ibn Qurra] and Copernicus [Nicolaus Copernicus]), so that the magnitude of the tropical year may be left — is slowest both at the beginning and at the end of its revolution, and fastest at the middle. At all the other positions it stands in an intermediate state between the slowest and the fastest of its motion. And so, over the whole period of the anomaly of the precession of the equinoxes, the year is once longest, once shortest, and more often intermediate — yet in such a way that the magnitudes of any two years equally distant on either side from the shortest year are always equal to one another. All of this is contained in the following table, where the time of the true and the mean equinox — when the anomaly stands near those eight positions of the whole revolution begun in the year 1653 — is computed together with the magnitude of the turning year.

The computation, moreover, has been made for the leap years nearest to the years in which the anomaly stands at those eight positions (except for the year 1653, which is the beginning of the revolution and to which the reckoning has been reduced, although it is not a leap year), because in leap years a smaller variation is observed in the Sun's entry into the first degree of Aries. The reckoning has also been fitted to the equation of the restored Calendar, which advances over 400 years. We have, however, neglected the hours in the equinoxes, since it seemed sufficient if the day of the spring equinox were

recorded with the time before or after noon, or midnight, the hours being omitted.

In the year 1653, when the revolution of the anomaly of the precession of the equinoxes begins:

The equinox — {true / mean} — will occur: {20 March after midnight [post med. noc.] / 20 March after midnight [post med. noc.]}

The tropical year will contain 365 days, 5 hours, 55 minutes, 37 seconds, 40 thirds [tertia]. This was also the magnitude of the year in the year 63 before the birth of Christ our Lord; and according to it the equinox anticipates one day in nearly 329 years.

In the year 1868, when the anomaly will be near the middle of the first quadrant of its revolution:

The equinox — {true / mean} — will occur: {21 March after midnight / 20 March about sunrise [circa ortum Solis]}.

The tropical year will contain 365 days, 5 hours, 53 minutes, 52 seconds. This magnitude of the year also suits the time around the year of the Lord 151; and according to it the equinox anticipates one day in nearly 231 years.

In the year 2080, the anomaly holding nearly the end of the first quadrant and the beginning of the second of its revolution:

The equinox — {true / mean} — will occur: {21 March about sunset [circa occasum Solis] / 20 March after noon [post mer.]}

The tropical year will be 365 days, 5 hours, 49 minutes, 16 seconds, 29 thirds. This magnitude of the year squares also with the time around the year of the Lord 366; and according to it the anticipation of the equinox by one day requires about 134 years.

In the year 2296, when the anomaly will be engaged around the middle of the second quadrant of its revolution:

The equinox — {true / mean} — will occur: {21 March after noon [post merid.] / 20 March toward sunset [sub occasum Solis]}.

The tropical year will be 365 days, 5 hours, 44 minutes, 46 seconds, 59 thirds. This magnitude of the year existed also around the year of the Lord 580; and according to it the equinox anticipates one day in about 94 years.

In the year 2512, when the anomaly will be near the end of the second quadrant and at the beginning of nearly the third — that is, at the middle of the whole revolution:

The equinox — {true / mean} — will occur: {21 March before noon [ante mer.] / 21 March before noon [ante mer.]}.

The tropical year will be 365 days, 5 hours, 42 minutes, 55 seconds, 7 thirds. This magnitude of the year existed also around the year of the Lord 795; and according to it, for the equinox to anticipate one day, about 84 years are required.

In the year 2724, the anomaly occupying nearly the middle of the third quadrant of its revolution:

The equinox — {true / mean} — will occur: {20 March after midnight [post med. noc.] / 21 March about sunset [circa occasum Solis]}.

The tropical year will be 365 days, 5 hours, 44 minutes, 46 seconds, 59 thirds. This magnitude of the year existed also around the year of the Lord 1009; and for the anticipation of the equinox by one day it demands about 94 years.

In the year 2940, the anomaly being engaged near the end of the third quadrant of its revolution and at the beginning of nearly the fourth:

The equinox — {true / mean} — will occur: {19 March after midnight [post med. noc.] / 21 March about sunrise [circa ortum Solis]}.

The tropical year will be 365 days, 5 hours, 49 minutes, 16 seconds, 29 thirds. This magnitude of the year squares also with the time around the year of the Lord 1224, and it demands about 134 years for the equinox to be able to anticipate one day.

In the year 3156, when the anomaly will be nearly at the middle of the fourth quadrant of its revolution:

The equinox — {true / mean} — will occur: {20 March about sunset [circa occasum Solis] / 21 March about noon [circa merid.]}.

The tropical year will be 365 days, 5 hours, 53 minutes, 52 seconds. This magnitude of the year existed also around the times of the year of the Lord 1438; and according to it, for the equinox to anticipate one day, about 231 years are required.

In the year 3368, when the anomaly will hold nearly the end of the whole revolution — that is, will be engaged at nearly the end of the fourth quadrant:

The equinox — {true / mean} — will occur: {21 March about noon [circa mer.] / 21 March about noon [circa mer.]}

The tropical year will be 365 days, 5 hours, 55 minutes, 37 seconds, 40 thirds. This magnitude of the year agrees also with the times around the year of the Lord 1653 and around the year 63 before the rising of Christ; and it requires about 329 years for the equinox to anticipate one day. And if the year always had this magnitude, the customary bissextile intercalation would have to be omitted every 329 years.

[Margin: Confusion among Christians, if the equation of the equinox were established according to the true motion.]

From all this it can readily be gathered how great a confusion would arise throughout the whole Christian world if the equation of the equinox were to be established according to the true motion — since it would very often have to be changed within the space of 1715 years, on account of the varying magnitude of the year, which in that span continually grows and shrinks in a remarkable way. This matter would throw all the Churches into great anxiety, since they would perpetually be in doubt whether in this or that leap year the intercalary day ought to be omitted, and would be compelled to canvass the opinions of astronomers on the question year after year — which would be utterly absurd, and, down to the present time, unheard of.

At the same time it is established that no equation of the solar year which prescribes that the intercalary day be omitted at fixed and settled times (such as ours is, laying down that in every four-hundredth year three intercalary days be removed) can in every respect square with the true motion of the Sun, so as to keep and preserve the equinox forever on 21 March. And this for the following reason: according to the true motion, now more years, now fewer, are required for the equinox to advance by one day in the Calendar toward the beginning of the month.

[Margin: That the equinox, according to the equation of the new Calendar, does not recede far from 21 March, and that therefore it was rightly instituted with reference to the Alphonsine year, which is intermediate.]

It is established, besides, that the spring equinox, throughout the whole period next to come, which will begin from the year 1653, will diverge from its seat no farther than the space of one day on either side, even though the equation of intercalation of the new Calendar be applied — since the magnitude of the Alphonsine year, which is in a way intermediate between the greatest and the least, has rightly been assumed as that from which the formula of intercalation is prescribed. For that formula is both consistent and uniform, and most accommodated to the common understanding, and it so holds the equinox around 21 March — on which its seat has been fixed — that it cannot recede far from it, but now precedes it, now follows it, and now finally falls upon the 21st day itself.

[Margin: That the difference between the true and the mean equinox does not reach one day and a half [diem vnum cum semisse].]

Lastly, from what we have said it is gathered that, over one whole period of the anomaly of the equinoxes, the discrepancy between the true and the mean equinox never grows to two full days — indeed, not even to a day and a half — a thing which nevertheless Maestlin [Michael Mästlin], by calumny, asserts can amount to a whole four-day span. And in this he manifestly conflicts with the doctrine of Copernicus, which he himself so greatly parades. This too will become plain as follows: the true and the mean equinox occur together, at the same moment of time, whenever the equation of the precession is nil — the anomaly of the precession holding the beginning, or the middle, or the end of its circuit and revolution; but the one is most distant from the other when that same equation is greatest, which indeed happens whenever the anomaly is engaged at the beginning of the second and of the fourth quadrant of its revolution.

[Margin: The true and the mean equinox: when they occur together, and when they are most distant from one another.]

[Margin: When the mean equinox precedes, or follows, the true.]

Further, when these two equinoxes differ from one another, the mean precedes and the true follows — that is, the mean equinox falls before the true — whenever the equation of the precession of the equinoxes is subtracted from the mean precession, so that the true precession may be gathered; which indeed happens whenever the doubled anomaly is less than a semicircle, that is, when the anomaly of the equinoxes has not yet [completed] the second quadrant...

[Continuation of the *Apologia adversus Maestlinum*, Liber Primus, Caput VI. The opening words complete a sentence carried over from the previous leaf.]

it will have completed the [second] quarter of the whole period. The mean equinox, by contrast, comes later and precedes the true one; that is, the true equinox falls before the mean whenever the equation of the precession of the equinoxes [aequatio praecessionis Aequinoctiorum] is added to the mean precession in order to make up the true precession. This happens whenever the doubled anomaly is greater than a semicircle — that is, when the anomaly has already passed the second quarter of the whole period.

[Margin: How great the maximum difference is between the true and the mean equinox.]

The one equinox precedes or follows the other by just so much time as suffices for the Sun to traverse, by its true motion, the arc of the equation of the precession of the equinoxes. Now the greatest equation of the equinoxes never exceeds $1^{\circ} 11' 22'' 30'''$, and the Sun's daily motion is at no time less than $0^{\circ} 56' 46''$. It follows that the interval between the true and the mean equinox never exceeds 1 day and 6 hours, or a little more — even when the Sun's motion is slowest and the equation of the equinoxes is greatest. I am therefore utterly amazed at what came into Maestlin's head when, as if dreaming, he said that the difference between the two equinoxes could swell to a whole four days, and that the mean equinox in this present age falls on 23 March — whereas in fact, from the year of Christ our Lord 1653 all the way to the year 3368, through one entire revolution of the anomaly, it never passes beyond the 21st, as is plain from the calculation given above.

[Margin: What deceived Maestlin, so that he thought the mean equinox could stand a whole four days away from the true one.]

But I think I can see the source of this Tübingen mathematician's error. He reasoned about the mean and true equinox just as we are accustomed to reason about the mean and true conjunction or opposition of the luminaries. For he supposed that the equinox becomes "mean" only when the line of the mean [motion reaches the] mean equinox — just as the mean conjunction or opposition of the Sun and Moon occurs when the lines of the mean motions of the Sun and Moon are conjoined or opposed. [He imagined that,] when the Sun stands at the point of the mean equinox, then between the point of the true equinox and the Sun's body the true equinox would be distant from the mean by a greater interval than the prostaphaeresis [prostaphaeresis], or equation of the precession of the equinoxes, allows — although even so this distance could not reach a whole four days, since the Sun's equation never amounts to two degrees.

[Margin: When the mean equinox occurs.]

But this lynx-eyed mathematician has deceived himself. For the case of the mean equinox is one thing, and that of the mean conjunction or opposition of the luminaries is another. The mean equinox occurs as soon as the Sun first reaches the point of the mean equinox, as the astronomers teach. Erasmus Reinhold [Erasmus Reinholdus], that most skilled astronomer, writes thus in the Prutenic Tables [tabulae Prutenicae], Precept 22: *There is no doubt that the Sun completes the vernal equinox when it still precedes the first star of Aries by just so great an interval as lies between the very true intersection of the two circles — the equinoctial and the oblique — and that same star.* That this is to be understood of the mean vernal section as much as of the true one is gathered from Precept 10, where he calls the difference between the mean and the apparent equinox the prostaphaeresis, or equation of the equinoxes, whose maximum is 7 first-minutes and 22 seconds together with the half of one second [7' 22½"].

Josephus Moletius [Giuseppe Moletti], a celebrated astronomer, teaches the same thing far more clearly in the Gregorian Tables [tabulae Gregorianae], Canon 13, where he says: *The apparent equinox occurs when the Sun enters the point of intersection of the apparent Ecliptic and Equator; the mean equinox, however, when the Sun enters the point of intersection of the mean Equator and the Ecliptic. And so the true equinox occurs when the Sun precedes the first star of Aries by as great a space as is the true precession of the equinoxes for the given time; the mean equinox, however, when the Sun precedes the first star of Aries by as great an interval as is the arc of the mean precession. The difference between these two equinoxes is the time corresponding to the prostaphaeresis of the equinoxes.*

Therefore the mean equinox does not occur when the line of the Sun's mean motion occupies the point of the mean equinox — as Maestlin wrongly maintains — but when the Sun itself holds that point, as we have set forth. For if the mean equinox came about when the Sun by its mean motion held the mean vernal section, the true and the mean equinox would not always occur together at the moment when the prostaphaeresis of the equinoxes is nil — something that would happen only very rarely, namely only then, when the true motion of the Sun does not differ from the mean. But this conflicts with all the astronomers, since they all teach that the mean equinox occurs together with the true one whenever the prostaphaeresis of the precession of the equinoxes is nil.

But let us carry the calculation forward to some further years, so that it may appear how rash and thoughtless Maestlin has been in this too, when he asserted that, if the method of equating the solar year prescribed in the new Calendar were kept, the equinox would slip back before the year of our Lord 15000 to 27

March. He asserted this not from any calculation, but from the false opinion by which he judged that the mean equinox falls on 23 March, and that the true equinox can stand a whole four days away from the mean. For it is from this, and from nothing else, that it is inferred that the true equinox will at some time slip back to 27 March, and will advance as far as the 19th. But that this is false, the calculation of the following years [demonstrates] clearly [and evidently].

[Margin: Why Maestlin thought the true equinox would slip back to 27 March.]

The vernal equinox, then, will occur [as follows]:

| Years of the Lord | Days of March | Time before or after noon, or midnight |
|-------------------|---------------|--|
| 4709 | 21 | after midnight |
| 5084 | 21. | before midnight |
| 5209. | 23. | about midnight |
| 6004 | 23. | about sunset |
| 10020. | 23. | after midnight |
| 15002. | 21. | after midnight |
| 15004. | 20. | about midnight |
| 15102 | 21. | after midnight |
| 15202. | 21. | after midnight |
| 15604. | 22. | after midnight |
| 15804. | 23. | about midnight |
| 20004. | 20. | after noon |
| 20005. | 20. | after midnight |

Where, I ask, in these 13 years down to the year 20005, is there an equinox on 27 March? I certainly find that it does not stand more than two or three days, and a little more, away from the 21st — even when the true equinox is computed from the Prutenic Tables with the formula of the Gregorian Calendar's equation always applied. But evidently Maestlin, simple fellow, supposed that none of us would go so far as to sift his prophecy about the equinox slipping to the 27th by reckoning it out into future ages — the same objection he earlier made to us about the feast of Easter of the year 1582 on the basis of earlier ages.

[Margin: That the new Calendar is perfect, even if the Prutenic Tables should still agree with the true motions after 10000 years.]

And if, after so great a span of years, it should be established that the Prutenic Tables still agree with the celestial motions (supposing the world is to last so long — lest our adversary rashly cry out, as he does more than once and most tiresomely, that we do not believe in a Last Day, just as one who extends a calculation to some future years is not thereby asserting for certain that the world will last through all those years) — who does not see that our method of intercalation, the mean method, fitted to run its course through 400 years, is the most suitable, if in the ecclesiastical computus something regular and even is to be set before the untrained people for determining the moveable feasts from the motions of the heavens (which we have shown at length to be altogether necessary in Chapter iiii and in other places)? For with this formula of intercalation applied, the equinox of its own accord returns to 21 March, even though, on account of the unequal magnitude of the solar year, or the unequal precession of the equinoxes, it is wont sometimes to stray a little to and fro from the 21st. And so with the fullest right this equation of ours may be said to keep the equinox about 21 March.

[Margin: Why the equinox, by the equation of the new Calendar, more frequently falls in the heavens after 21 March than before.]

Yet it must not be passed over here that the equinox, if the equation established for the Alphonsine or mean year be applied, more frequently follows 21 March than anticipates it, and recedes by a greater interval from that same 21st toward the end of the month than toward the beginning of the month. For since, as has been said, the shortest year requires 84 years for the anticipation of the equinox by one day, whereas the Alphonsine or mean year demands 134 years, and the longest 329 years, it comes about that the speed with which we forestall the equation owed to the longest year is greater than the slowness with which we prolong the equation answering to the shortest year. Hence, when the year is nearly at its longest, the equinox will indeed be rolled forward to the later days of the month, because more intercalary days are omitted by our equation of the mean year than the situation requires; and when the year is nearly at its shortest, the equinox has slipped back to the earlier days of the month, because not so many intercalary days have been retained by our equation of the Alphonsine year (days that ought to have been retained on account of the shortest year) as were previously omitted, which the longest year prescribed should be retained.

[Margin: That any equation other than the one established for the mean year drives the equinox further from its proper place than it should.]

But so that it may appear yet more evidently that the mean year had necessarily to be assumed in order that a fixed and determinate equation might be prescribed — not the shortest or the longest year, as we set forth in Chapter v — we have computed the equinox of the year 5084, applying the equation now with the span of 84 years (which the shortest year requires for the anticipation of the equinox by one day), now with the span of 329 years (which we said the longest year demands for the equinox to anticipate by one day). And so, if the former equation be used, there will be removed from the year 5084 (counting in those ten days that were taken away in the year of the correction) altogether 51 days, and the equinox will fall on about 7 April — that is, 17 days after 21 March. But if the latter equation be applied, there will be removed altogether only 21 days, and the equinox will fall on about 7 March — that is, nearly 14 days before 21 March. Yet with our equation applied, the days removed up to that year will be 36, and the equinox on 21 March will fall about before midnight, as is plain from the recent calculation of the 13 years above. You see, therefore, that by the equation of the shortest year the equinox recedes from 21 March toward the later part of the month by too great an interval, while by the equation of the longest year it slips back too far toward the beginning of the month from that same 21st,

back. This, however, the equation of the mean year keeps and guards about that same 21st day. In the same way, the calculation will show that an equation set up for any year other than the mean drives the equinox from its proper seat — the seat we fixed for it on 21 March — further than it should.

[Margin: That the equation established for the mean year cannot [?] be faulted.]

This is clear from the magnitude of the year of 365 days 5 hours 53 minutes 2 seconds 37 thirds, which requires about 207 years for the anticipation of one day, and which might therefore seem apt for an equation to be prescribed to it, since 207 years hold almost the middle place between 84 and 329, which we said were the shortest and the longest year required for the equinox to anticipate by one day in the Calendar. Let us see, then, whether this equation keeps the equinox at 21 March as well as ours does. The calculation shows that in the year 2940, when 18 days will have been removed in all by this equation, the equinox occurs on 18 March about sunrise — that is, before 21 March; and in the year 10020, when by the same equation 51 days in all will have been taken away, the equinox occurs on 1 March, also about sunrise — 20 days and more, that is, before 21 March. Let us now compare these equinoxes with the equinoxes of the same years derived from our equation, and we shall find that ours (even though the 134 years by which the equinox anticipates one day according to it do not hold the middle

place between the 84 and 329 years that the shortest and longest year require for the anticipation of one day) drives the equinox from its proper seat by so much smaller an interval: since in the year 2940 it does **not** exhibit the equinox on 19 March after midnight, while in the year 10020 the same equation throws it back to 23 March after midnight. From which it follows that our equation can be justly faulted by no one, since no more suitable one can be brought forward — unless someone should say that an uneven and irregular equation, varying with the varying magnitude of the year, ought to be applied at various times: which we long ago excluded from the usage and custom of the Church.

MAESTLIN'S ARGUMENTS AGAINST THE METHOD of equating the solar year, to be applied in each set of four hundred years, and their solutions.

CHAPTER VII.

[Margin: Maestlin's malice and fraud in attacking the equinox of the new Calendar.]

Although, from what we have written in the two preceding chapters, everything that can be brought against the Gregorian correction of the year (so far as concerns the restoration of the equinox to 21 March and its preservation there) can be refuted with little trouble, nonetheless — so that the truth may appear more fully — we shall in this chapter dissolve all the arguments of our adversary, the many arguments he has fabricated to overthrow the new Calendar from its foundations and has gathered together into a book of his own. And first, it must not be concealed that in this matter he acts most maliciously: for in certain years he ascribes to the following day, before noon, an equinox that the Prutenic Tables place on 22 March after noon; and, on the other hand, an equinox that the same tables set on 21 March before noon he throws back into the preceding day, after noon — so that by this device he may falsely persuade those ignorant of astronomy that the equinox recedes from 21 March, by our equation, more than is right. And he shows himself no less a trickster when, to make it appear that the equinox falls not on the 21st of March but on the 20th, he adapts his calculation to bissextile [leap] years, in which necessarily, on account of the added intercalary day, the equinox occurs earlier than in common years. This appears in the years 1584 and 1596 (to pass over others), in the former of which he asserts that the equinox falls on 20 March at the 10th hour after noon, and in the latter at the 9th hour after noon of the same 20th day. But this does not conflict with our equation. For since these years are bissextile, it is no wonder that in them the

equinox occurs on the 20th and not the 21st. Indeed (when it presses so), we may rightly say, in the ecclesiastical manner, that in both cases the equinox is to be assigned to the 21st, since it occurs in the night preceding the 21st — that is, after sunset of the 20th. But setting these matters aside (from which, however, one may gather how solid his arguments are, resting as they do on so tricky a reasoning), let us come to the thing itself.

[Margin: Maestlin's first argument, from the inconstancy of the astronomical tables.]

First, then, Maestlin inquires, with anxious and worried mind, which astronomical tables this Gregorian emendation of the Calendar follows — the Alphonsine or the Prutenic. And after concluding from certain conjectures that the Prutenic have been used, he cries out and clamors that the very foundations of the new Calendar are shaky, on the ground that the calculation of no tables published down to this day agrees exactly with the heavens, since they are uncertain and call for some vigorous restorer; and he affirms that this is the common complaint of all mathematicians. From this he concludes that the new Calendar is in no way perfect or perpetual, and therefore will not endure through all ages without some change, since its foundation is by no means firm.

[Margin: Maestlin's second argument, from the equinoxes of the present years.]

Next (for it pleases me to set out all this trickster's arguments together, so that all his sleights of hand may alike vanish), he attempts to overturn our equation from its foundations by various examples, pertaining now to the present years, now to future and past ones. For concerning the present years he writes thus:

But why say much? Why does the author of the Calendar, the Pontiff, and their follower boast of the perfection of this Calendar, when the experience of the present years, in which we now live, convicts it of falsehood? For the omission of the 10 days has not brought back

[it] brought the equinox back completely to 21 March. For in our own time it falls, in every intercalary year, not on the 21st but on the 20th of March. Thus in the year 1584 it fell on 20 March at the tenth hour of the night; in 1596 it will be at the ninth hour of the night of the same day; in 1612 at the eighth hour, and in 1624 at the seventh hour after noon of the same 20th day of March, and so on in succession. Indeed, after the year 1640 the equinox will climb — even in those years that are the first after the intercalary ones — to the same 20th day of March. And so from that year on, the equinoxes of all the bissextile years, and of all the years next following them, will fall on 20 March, right up to the year 1700.

And although by the omission of the intercalary day of the year 1700 some of this will be restored, that restoration is merely the settling of a shifted balance [versurae solutio]. For the equinoxes of the bissextile years, and of the years first after them, will indeed be brought back, by the deletion of the intercalary day of the year 1700, to 21 March; but in this very way the equinoxes of the second and third years after the bissextiles will be shifted to 22 March. And this permutation and alternation cannot be removed, until at last — not so very many years afterward — the equinoxes of all the bissextile years, and of the three years following them, abandon the 21st of March altogether. So far is it [from being possible] that any remedy can be devised for this difficulty by the new Calendar, even if everyone were to heap all their learning into a single pile.

And in this way Maestlin [Michael Mästlin] tries to show that the correction of the Calendar does not suit the present years.

[Margin: 3. Maestlin's third argument, from the equinoxes of future years.]

That our equation [aequatio] by no means corresponds to future years, he thinks he can conclude as follows. In the year 1600 the equinox falls on 10 March, at half past the eighth hour after noon; in 1900, on 9 March at half past the eighth hour after noon — according to the day-numbers of the old Calendar. The true anticipation, therefore, is only one day. But the new Calendar, over these 300 years, passes over a whole three-day span — namely those three days, the intercalary days of the years 1700, 1800, and 1900. Therefore, according to its numbers, this equinox will fall (with the 10 remaining days also removed) in the year 1600 on 20 March, but in the year 1900 on 22 March. Moreover, in the years following after 1900 this same divergence has greater increments: as in the year 1905, which is the first after some bissextile year, the equinox falls on 23 March, at the 2nd hour of the morning. In 1906, which is likewise the second after some intercalary year, the equinox will occur on the 23rd, at the 8th hour before noon. And in 1907, the third after a bissextile, the equinox will be on 23 March, at the 2nd hour after noon. You see, then — you who exalt this Calendar to the stars with such praises, and celebrate a fixed seat in it for the equinox — that this equinox is too slippery for you to be able to hold it fixed on the 21st of March.

Then, after nearly a page and a half, he closes this second argument in this fashion: "You mathematicians, then, defenders of the new Calendar — do you still say, along with the Pontiff, that the day of the equinox is fixed? Are 19 and 23 March the same as the 21st?"

[Margin: 4. Maestlin's fourth argument, from the equinoxes of past years.]

Finally, he strives to persuade us that the correction of the Calendar does not even agree with past years, in these words: "Astronomical calculation (of which the computus of the Calendar is a part) has this property, that it can be extended to preceding times as well as to following ones, reckoned from the epoch of its founding. For this reason, from the calculation of the celestial motions built up out of the observations of these last 2000 years only, we compute the motions of the heavenly bodies backward, right up to the first creation of things, no otherwise than if the calculation of the motions had already then been so constructed." And he adds shortly after: "In just the same way, the use of this Calendar can be accommodated to past as well as to coming years. For this is its intention, and it can be nothing else, than that — just as it now performs what has to be performed — so it would already long ago have performed the very same thing, had it only begun to be used earlier. But how the matter stands, even this one example shows. In the year 1200 the true vernal equinox was on 12 March at 6 p.m.; but the day that in the old Calendar was the 12th would then, in the new, have been the 19th. For of the 10 days omitted in the year 1582, the three later ones fall to those 400 years between the years 1200 and 1600. Therefore the day of the equinox there was by no means the 21st, but the 19th of March."

[Margin: 5. Maestlin's fifth argument, against the removal of the ten days that was carried out.]

Our adversary goes on, and strives to confirm in these words that the removal of the ten days in the year 1582 does not agree with the times of the Council of Nicaea: "In particular, here is singularly to be noted the gross and ridiculous — not to say shameful — aberration of the new Calendar. The foundation and origin of the correction is the authority, or the decree, of the Council of Nicaea. Who here will not say that the calculation of the new Calendar ought to agree in the highest degree with the time of that Council? For if it has any perfection, that perfection must surely be of such a kind that, had it been known to the Fathers of that Council and received by them, it would from that time on, gradually, at the appropriate places and times, have removed those 10 days. And had this been done, there would now be no need for those 10 days to be collected into a single heap and eliminated all at once over this whole span of time; rather the Calendar itself, of its own accord, would have offered all these things just as they are now displayed. And in this way one and the same state — namely the one that obtained at the time of the Nicene Council — would have remained unchanged in a continuous series. But behold what its constancy is! The 10 days have been thrown out all at once, precisely because they were not removed one by one,

from the Council of Nicaea onward, at the appropriate times. But what are those places and times at which this elimination was neglected? Surely one must hold that this [omission] failed to be carried out on ten separate occasions, seeing that it grew to 10 days. One must also be able to note those very places in the new Calendar most exactly. Yet if this new calculation (mark this, you mathematicians!) is drawn back to the said years in the same proportion in which it is handed down to be continued into future years, by no means 10, but only 9 days are shown to have needed eliminating up to now — namely the intercalary days of the years 1500, 1400, 1300, 1100, 1000, 900, 700, 600, and 500. For the remaining centennial years, namely 1200, 800, and 400, remain bissextile. You see that plainly no place is left over for exterminating a 10th day. Therefore the equinox there must have been not on the 21st, but on the 20th of March — against which, however, both experience and your own so-often-repeated testimony cry out. Behold what the perfection of your work is, how elegant its concord with experience and with the observations!"

These are the chief arguments by which Maestlin — that new mathematician fallen from the sky, who despises and counts as nothing all mathematicians whatsoever, past, present, and to come — supposes he has utterly overthrown the equinox of the new Calendar, both because it has not been rightly restored to 21 March and because it cannot stay constantly on the same day. Since these attacks assail the equinox of the new Calendar on many heads, we shall answer them one by one, and shall also refute several other cavils of his against the same equinox, which he has scattered here and there throughout his examination.

To begin, then: all these arguments of his sin in many ways, and have no force whatever against

[Margin: That Maestlin's arguments err, in that they assume the true equinox.]

the new Calendar. For in them the true motion is always assumed, and the true equinox — whereas it has been abundantly and sufficiently shown above that, in the business of correcting the Calendar, only the mean and uniform motions are to be considered; indeed, that even the mean motions being set aside, something regular and even should rather be employed, something fitted, like a kind of cycle, to the grasp of the common people, provided only it does not stray far from the truth. This our adversary himself, compelled by the truth, admits, when — after examining the equinox of several years from the true motions — he writes thus:

[Margin: Maestlin's testimony that in the ecclesiastical year the subtleties of the astronomers are not to be observed.]

"Should anyone wonder why I dispute about these astronomical subtleties in the civil or ecclesiastical year, let him know that I — and with me all sound and prudent mathematicians — freely confess that these astronomical subtleties in truth contribute nothing to the civil year; and therefore we hold that none of the civil authorities or of the common people should be burdened with them. Just as Julius Caesar, that most prudent emperor, was unwilling in his reform of the year to stir up any disturbances with subtleties; nor did the Fathers of the Council of Nicaea — who furnished the occasion for this new Calendar (though beyond their own intention, as I have shown in my *Dialexis*, chapter 6) — give any admonition about these subtleties. Indeed, we ourselves know that whenever the Church has lapsed into subtleties of this kind — such as once existed between the Roman and the Alexandrian Church concerning the term of Easter, before the nineteen-year cycle was restored by Dionysius [Dionysius Exiguus], a Roman abbot, around the year of CHRIST 532 — it has been horribly disturbed, with the greatest offense to the weak. On the other hand, it is unknown to no one that in the meantime, from the year 532 up to this new Calendar, because these subtleties were set aside, uniformity and a never-sufficiently-praised concord (as regards the present use of the Calendar, together with the celebration of Easter) were preserved throughout the whole Christian world. It is therefore not pleasing to me to raise here any question about these subtleties; I would rather leave them to the school of astronomy. But the author of the Calendar, in his Canons, and the Pontiff, in the Bull, and the other collaborators of theirs whom the Pontiff summoned to the city in great number (as he himself testifies in the Bull), do occupy themselves with these subtleties, and are not ashamed to boast on their account about this new Calendar of theirs — that it is so perfect that it will never be subject to any change: which surely they understand of the astronomical subtleties observed by them with unwavering rigor. For if anything were found wanting in these, it is certain that such splendid praise, destined to endure forever, could by no means belong to this Calendar of theirs. Hence Pope Gregory XIII does not shrink from subjecting the whole Christian world, by the subtleties of those canons, under threat of the wrath of Almighty God himself and of his blessed apostles Peter and Paul, exactly as if a great part of eternal salvation were reposed in these subtleties. For this reason these very subtleties must here be examined by me, so that it may be shown how foolish — indeed how impossible — it is to wish to bind the civil year to subtleties of this kind: because not a correction, but a confusion of the Calendar must necessarily follow from it. Whence it becomes manifest how unhappily this very thing has been attempted in the new Calendar."

[Margin: How true the statements are in Maestlin's immediately preceding testimony.]

In these words he has said much that is true (lest we seem to disapprove even if he has for once said something good), and much very aptly for the use of the new Calendar; but much also that is false, by calumny, as is his habit, he has pronounced. Most truly indeed he said that in the civil and ecclesiastical year astronomical subtleties are not to be pursued, and that none of the civil authorities or of the common people should be burdened with them — which we too freely admit. For throughout the whole Calendar, setting aside the true motions, we have consistently employed only the mean motions, or rather cycles, most easily grasped by the civil and common folk. This is clear both from the [reckoning] of the year, since it is established to the magnitude of the mean year, and from the Cycle of Epacts [Cyclus Epactarum], which is inscribed in the Calendar for indicating the new and full moons — since it always assumes equal (mean) motions of the Moon and its conjunctions and oppositions with the Sun. So that from this alone it may be inferred that Maestlin is rashly and inconsiderately inveighing, with such force and such ferocity, against the new Calendar, when he attacks it with astronomical subtleties which he himself, together with us, judged should be rejected in the business of the Calendar.

[Margin: Maestlin's rashness in attacking the Calendar.]

He also truly affirmed that neither did Julius Caesar follow them [these subtleties] in his reform of the year (just as neither did we follow them in this restoration of the Calendar), nor did the Fathers of the Council of Nicaea give any admonition about them. From which it follows that he is rash, and impudent in his *Examen*, who — in order to parade the subtlety of his own wit — for that reason alone disapproves the Calendar, because it does not in every respect answer to the subtleties of the astronomers, that is, to the true motions.

Finally, it is true, what he says: that from the time when the abbot Dionysius restored the nineteen-year cycle of the golden number — or, to speak more truly, inscribed in the Roman Calendar the cycle framed by Eusebius of Caesarea [Eusebius] in the times of the Council of Nicaea and expounded by Theophilus of Alexandria [Theophilus], making no change in it except so far as the method of computation required, on account of the differing starting-points of the calendars — from that time, I say, because the subtleties of the true motions were set aside, the greatest concord in the celebration of Easter was preserved.

[Margin: How often Easter was celebrated contrary to the mind of the Council of Nicaea, in the few years before the restoration of the Calendar.]

And would that this same peace and concord those who have departed from the [Catholic] Church might resolve to enter upon and to preserve together with us — namely, that, leaving aside that exact calculation of the true motions, they should follow, along with the Catholic Church, the mean, or (so to speak) cyclic, motions: just as those early Christians most gladly, out of zeal for peace and unity, accepted the cycle inscribed in the Calendar by Dionysius, even though very often, by that cycle, Easter was celebrated otherwise than the Fathers and Councils had decreed (which could not be otherwise, on account of the imperfect condition and nature of the cycle); seeing that in this our age — to pass over the illegitimate Easter feast-days of earlier times — before the correction of the Calendar, in any nineteen-year span, six times Easter, on account of the anticipation of the equinox alone, was not rightly celebrated by that cycle. This happens whenever these six golden numbers — 3, 6, 8, 11, 14, 19 — occur. For the 14th moons of all these, by the institution of the Fathers of the Nicene Council, were Paschal and fell in March. For the golden number 6 placed its 14th moon on 11 March, on which the equinox occurred; while the other five golden numbers had their 14th moons set after 11 March and before 21 March, on which the Church had placed the equinox, and therefore were suitable for the celebration of Easter — yet the Church rejected them all as useless, because they showed the 14th moons before the time of its equinox, that is, before 21 March.

I pass over in silence the errors that were committed in celebrating this same Easter, because the golden numbers were showing the new moons a whole four days, and more, later than they ought — from their right course

[Margin: Unless the Calendar had been corrected, Easter after the year 2624 would always have had to be celebrated against the decree of the Council of Nicaea. The necessity of the correction of the Calendar, against Maestlin.]

deviating [from their right course]. So much so that from the year 1500 to the year 1582 — that is, in the span of 83 years, up to the point at which the Calendar was corrected — 54 Easter feast-days were not rightly celebrated, and only 29 rightly. And had the Calendar not been restored, in the remaining 17 years up to the year 1600 Easter would have been wrongly celebrated twelve times, and rightly only five times. From the year 2624 onward, moreover, no Easter would any longer have been legitimate, but all would have had to be celebrated against the sanctions of the Pontiffs and of the Council of Nicaea. All of which has been most carefully collected by Paul of Middelburg [Paulus de Middelburg], in book

12 of the *Paulina*. So that here too the necessity appears of this correction, instituted by Gregory XIII — lest, that is, the Church slip into such foul errors and disturb, or utterly dissolve, that concord and confession of the faithful.

[Margin: That Maestlin, out of hatred for the Roman Pontiff, urges that the old Calendar be retained. In what respects this same immediately preceding testimony of Maestlin is false.]

Who, then, can doubt that Maestlin is trying to persuade the Christian people — out of hatred for the Roman Pontiff rather than out of zeal for peace and concord — to explode the new Calendar and retain the old? For far greater concord and agreement in celebrating Easter would be preserved under the new Calendar than under the old, if only Maestlin, that seditious peacemaker, and the other heretics were willing to lay aside their inveterate anger against the Supreme Pontiff and accept it. For, as will clearly appear from what follows, so many and such shameful errors cannot be committed in the celebration of Easter under the new Calendar.

I have set out what Maestlin said truly, though not with a sincere mind; now let us see what he said falsely (the things he spoke from the heart). First, then, it is false, what he denies — that it is pleasing to him to raise here any question about the subtleties of the astronomers — since he does nothing else in his whole examination but harass the new Calendar, on this ground alone: that it does not entirely agree with those subtleties. Next, lest he seem more a malicious dissembler of his own design than an accuser of another's, he falsely charges the author of the Calendar, the Pontiff, and the other astronomers summoned by the Pontiff for the emendation of the Calendar, with occupying themselves with these subtleties. For had we wished to pursue subtleties of this kind, we would neither have established the equation of the solar year according to the mean magnitude of the year, nor have inscribed the Lunar Cycle in the Calendar, but would have prescribed that all these things be observed from the astronomical tables.

[Margin: That Maestlin falsely asserts that in the new Calendar the astronomical subtleties are observed. What the Pontiff intends in the excommunication against those who do not accept the new Calendar.]

Finally, it is false, and far removed from the truth — indeed a most impudent lie — that Gregory XIII, in the Bull of the Calendar, subjects the whole Christian world, under threat of the wrath of Almighty God, to the subtleties of the astronomers, exactly as if a great part of eternal salvation were reposed in these subtleties. For in that whole Bull you will find not a word making mention of

these subtleties; and the Pontiff strikes with anathema only those who are disturbers of peace and concord, and contumacious against his edict — whose standard-bearer and leader Maestlin professes himself to be. And in the preserving of this peace a great part of eternal salvation is reposed — not in the subtleties of the astronomers — since, without the obedience owed to the Roman Pontiff as the Vicar of Christ and universal shepherd of the whole Church, and which alone safeguards peace among the faithful, eternal salvation is to be hoped for by no one. But this argument — that the Roman Pontiff could by right, under pain of excommunication, command that the new Calendar be observed — has been most learnedly treated by Johann Busaeus [Johannes Busaeus] in his Apologetic disputation for the Gregorian Calendar against Jakob Heerbrand [Iacobus Heerbrandus], Maestlin's associate in the same disease of impiety and slander; to whom we refer the reader.

[Margin: Maestlin, unwilling, favors the new Calendar.]

Since these things are so, there is no reason, Maestlin, for you to undertake to examine these very subtleties, in order to demonstrate how foolish, and even impossible, it is to wish to bind the civil year to subtleties of this kind, because not a correction but a confusion of the Calendar must necessarily follow from it. For of our own accord and with a willing mind we grant and concede to you that it cannot be that the civil year should be bound to the subtleties of the astronomers, and that the greatest disturbance would arise in the whole Christian world if these were applied to the Calendar. It was for this very reason that we neglected them, and were content rather with the mean motions, or cycles. In this matter no one can rightly reprehend us — not even you yourself as judge, if you are willing to abide by your own judgment. Meanwhile we give and render you huge thanks, that you have so vigorously favored our cause with these words of yours, so that you appear to have been one of those who took part in the restoration of the Calendar. But now let us come to the solutions of the arguments.

[Margin: Solution of Maestlin's first argument. That the Prutenic Tables were employed in restoring the Calendar. That the inconstancy of the astronomical tables does not stand in the way of the perfection and perpetuity of the new Calendar.]

As for what concerns Maestlin's first argument: I admit that in this business of correction the Prutenic Tables [tabulae Prutenicae] were employed, as being in this age more celebrated and more probable. Hence it came about that — since they teach that sometimes more years than 134 are required for the equinox to anticipate by one day in the Calendar, and sometimes fewer — the equation of

the solar year was established according to the mean magnitude of the year, exactly as if in each span of 134 years the equinox advanced by one day toward the beginning of the month; so that by this mean [rate] that excessive slowness and swiftness might in some way be compensated.

Nor indeed does the inconstancy or variety of the tables stand in the way of this. For, as we said in Chapter 5, the perfection and perpetuity of the Calendar does not consist in this: that the equinox be so fixed and stabilized on 21 March that it can never be moved from it, by our own or by any other equation whatever — since this can in no way come about, both on account of the mutability of the tables (whichever we might in the end choose to follow), and also because a certain middle, even and regular way, fitted to the grasp of the common people, has to be chosen, as reason requires, and has been observed in the emended Calendar. Rather, the perpetuity of the Calendar consists in this (as was said above): that in it the Cycle of Epacts is arranged with such artifice that nothing in it need ever be changed in future ages, but the Calendar will remain wholly untouched — even if, by the intercalation or omission of one day or of several, by decree of the Supreme Pontiff, the equinox will have to be recalled to 21 March, should it happen to have slipped too far from it, so that it cannot return of its own accord, without this remedy. Of this perpetuity of the Calendar we shall treat more fully in Book 2, Chapter 4; where we shall also show by what method the new moons too, and the full moons, can, if need be, be corrected, with no change at all made in the Cycle of Epacts that is inscribed in the Calendar.

There is this further point: as was said in the previous Chapter, the equinox, according to our equation and the Prutenic Tables [tabulae Prutenicae], returns to the 21st day even after 20000 years, though in the interval it wanders now to the 23rd, now to the 19th. And this is no absurdity, since no equation of the solar year, being even and uniform, can keep and retain the equinox on the 21st day itself, as we showed in the same Chapter.

[Margin: Solution of Maestlin's second argument.]

There is therefore no need (as he claims) for the author of the Calendar to bend all his strength to this task, nor for us its defenders to join our forces together, and to reconcile this Elogium of the Pontiff — which boasts that the reformed Calendar answers to every magnitude of the year — with this even anticipation of ours over 400 years, lest the true vernal equinox slip out of our hands like an eel. For it is with such words that Maestlin [Michael Mästlin] boldly challenges us all, and, like a braggart soldier, empty-headedly boasts that he has led a triumph over us, reproaching us more than once that, whatever we contrive, we cannot hold

fast the equinox which we fixed with great labour on 21 March. There is no need, I say, for such straining of the mind, because with no trouble the equinox will either stay in its seat, or at least, if it should ever depart from it, will be restored to it — provided that the remedy of which we have spoken is applied at fitting times, by the authority of the Roman Pontiff; and this will very rarely happen. All of which is easily apparent from what we have said.

[Margin: The restoration of the equinox to 21 March, by omitting the intercalary day in the year 1700, is not the settlement of a *versura* [a paying of one debt with another loan], as Maestlin falsely alleges.]

WRONGLY, next, does he try to prove by Maestlin's argument that the equinox, through the removal of 10 days, and our equation, do not agree in the present years. For the years 1584, 1596, 1612, 1624, which he sets down as examples, are all bissextile [leap] years. It is no wonder, then, that in them the equinox, on account of the added intercalary day, advances from the 21st toward the 20th of March; although with full right it can still be assigned to the 21st day, since in all those years it falls after sunset, namely at 10, 9, 8, and 7 hours after noon — as we also maintained above at the beginning of this Chapter. And indeed it is known to all astronomers that at least two days must be allotted to the equinox, on account of the common and bissextile years, even if the intercalation applied every fourth year answered most exactly to the solar year. So that from this too it is plainly evident that Maestlin, in his examination, is a sycophant, and is (as the proverb says) looking for a knot in a bulrush [seeking difficulty where there is none]. Most rightly, therefore, as regards the present years, was the equinox recalled to 21 March. That after the year 1640 the equinox will move ever more and more toward the beginning of the year (for in the year 1645, which is not bissextile but the first after a bissextile, it will fall on 20 March at 12 hours 24 minutes after noon; and in the year 1697, which is the first after a bissextile, it will likewise fall on 20 March at 9 hours after noon) — this wonderfully confirms the omission of the intercalary day to be made in the year 1700, so that in this way, in the years after the bissextile, the equinox may be drawn back to the 21st day.

[Margin: The equinox, on account of the inequality of the year, departs from the 21st day in both directions.]

NOR indeed is this restoration (as Maestlin slanderously claims) merely the settlement of a *versura*. For although in future years after 1700, on account of this same removal of a day, the equinox of the years that are second and third after the bissextiles will be shifted to the 22nd and even to the 23rd day (which Maestlin also raises in his third argument), this cannot be blamed on our

equation, but on the inequality of the solar year. For since, as was shown above, the equation of the year must be even and regular, so that it can be grasped by everyone, whereas the magnitude of the year is unequal, now greater, now lesser — it comes about that, if an equation is applied answering to the mean magnitude of the year (which alone is even, as the use of the Church requires), the equinox cannot perpetually be kept on 21 March, but from the 21st day rolls down now to the 22nd and 23rd, now climbs up to the 20th and 19th.

[Margin: When the equinox rolls down from the 21st day to the 22nd and 23rd, and when it returns to the 21st.]

It will roll down to the 22nd and 23rd day when the magnitude of the year is greatest, and therefore more years than 134 are required for the anticipation of one day — as happens in our own century, and will continue to happen right up to the year 2080, because throughout all this time the turning year [annus vertens] is greater than the Alphonsine [Alphonsine year], as is clear from the preceding Chapter. But from there it will return to the 21st day when the turning year becomes smaller than the Alphonsine, since then the equinox will require fewer than 134 years for the anticipation of one day. But from the 21st day it will advance to the 20th and 19th of March when, on account of the least magnitude of the year, it has returned to the 21st day, and the year is found to be still smaller than the Alphonsine year. And as soon as the year becomes greater, the equinox will draw back from the 19th and 20th to the 21st.

[Margin: When the same recedes from the 21st day to the 20th and 19th, and when it returns from there to the 21st.]

The 21st of March, then, is assigned to the equinox, holding as it were the middle place between the 23rd day and the 19th [Margin small type; day-number worn but the body reads 19], out to which the equinox runs, so that it can scarcely run further, not even in the space of very many centuries, but from there of its own accord returns to the 21st day, as was shown in the previous Chapter. And so this, Maestlin, either is not a *versura* at all, or, if it can in any way be called a *versura*, must be reckoned not the *versura* of a bankrupt spendthrift for ruining the family estate, but the *versura* of a prudent head of household for establishing the family estate — a device undertaken to gain time.

[Margin: The 21st of March, assigned to the equinox, holds the middle place between the 23rd day and the 10th [recte: 19th], out to which the equinox can run, since from there it returns of its own accord to the 21st day.]

BUT if someone should object that from this excursion of the equinox to the 23rd of March and to the 19th it comes about that Easter can be celebrated both in the last month and in the second — which seems absurd: I answer, first, that this can happen only very rarely. For even if the equinox rolls down to the 22nd or 23rd, Easter will never on that account be celebrated in the last month, unless Epact [epacta] xxi or xxii is in use — which rarely happens, since Epacts xxiii and xxii do not come into use in every nineteen-year cycle, but out of all 30 cycles of the Epacts in only eight. For among the remaining 22 cycles, Epact xxiii is found alone in ii cycles, and Epact xxii in another ii, as will afterward be evident from the expanded table of Epacts. There is this further point: that this error, whenever it occurs, is very often removed by the Dominical letter [littera Dominicalis], so that Easter is celebrated after the equinox, even though those Epacts are in use and cast their 14th Moons into the twelfth month. By the same reasoning, although the equinox may advance to the 20th or 19th of March, Easter will never on that account be thrown back into the second month, unless Epact xxiiii or xxv is running — which too will happen rarely.

[Margin: Rarely does Easter fall into the last or the second month under the new Calendar.]

NEXT, suppose both do happen: even so, this is not new or unusual in the Church of GOD, since this very thing must necessarily have occurred in the times of the Council of Nicaea itself, when the Decree concerning the right celebration of Easter was established — or rather confirmed — as we demonstrated above in Chapter 5. Indeed, even if the solar year needed no equation, but the equinox were always fixed on the 21st and 20th of March,

[Margin: It is nothing new that Easter should sometimes fall into the last or the second month.]

CAPVT SEPTIMVM [Chapter Seven, continued]

and the old Calendar were retained, Easter would still necessarily be thrown back into the second month whenever, the equinox falling on 20 March (which in bissextile years can necessarily happen, as we showed above), the 14th Moon fell on 20 March. Nor indeed will anyone justly blame the Catholic Church for this — that it sometimes celebrates Easter in the first or second month, when the reckoning of the cycle, or the day fixed for the equinox, so requires — since she has been freed from the yoke of the Mosaic Law. For did not Easter, before the correction of the Calendar, very frequently get thrown back into the second month, and into the fourth week of the first month, and yet no one dared on this

account to condemn the Church? It is enough that the Church celebrate Easter according to the decrees of the Fathers and the Councils, keeping to a certain fixed day of the equinox (even if it does not always fall on that day), and applying the Lunar cycle to find the 14th Moons — although these 14th Moons sometimes differ from the true motion.

[Margin: Easter is necessarily celebrated sometimes in the second month, on account of the two days that the equinox requires, whether the old Calendar be retained or the new one adopted.]

I, indeed, together with very many other most learned men, was always of this opinion: that the equinox ought not to have been corrected by the Church, even though it had run out as far as 11 March, if it had checked its course there, and had begun of its own accord — with no equation applied — to return to the 21st day. How much more, then, ought we now to be content with this equation, to be applied every four-hundredth year according to the mean magnitude of the year — the easiest of all — which lets the equinox be moved from its established seat, that is, from 21 March, by no more than an interval of two or at most three days?

[Margin: There would have been no need to desire a correction of the Calendar, if the equinox, having advanced to 11 March, had begun of its own accord to return to the 21st, with no remedy applied.]

NOW if it should happen that the equinox altogether leaves 21 March — whether by advancing toward the end of the month or toward the beginning, so that it cannot return to its appointed seat — it has been said often enough by what method, through an extraordinary intercalation or omission of a few days, by the edict of the Supreme Pontiff, it is to be restored to 21 March. And this is not repugnant to the perpetuity of the Calendar, as we have said.

HERE, moreover, this advance and retreat of the equinox has place only in the Prutenic Tables, and was foreseen beforehand by those who amended the Calendar by order of the Supreme Pontiff — as can be understood from the compendium of the new method of restoring the Calendar sent to the Christian Princes, in which both the even and regular equation, accommodated to the mean magnitude of the year, and the uneven, irregular one drawn from the doctrine of Copernicus [Copernicus], were described: the former [placed] first, as easier and better suited to the use of the Church, as was said above. But if perhaps the Prutenic Tables are not so certain as most astronomers hold, but the Alphonsine Tables answer the Sun's motion more correctly [as most astronomers affirm], then this advance and retreat of the equinox will have no place, but

through a long series of ages it will remain in its assigned seat. And then again it will have to be restored to that seat, if it should ever depart from it, just as we said above.

[Margin: The recession of the equinox from the 21st day has its place in the Prutenic Tables.]

You see, therefore, Maestlin, how easily, by an extraordinary intercalation or omission of an intercalation, a remedy can be provided under this new Calendar for this difficulty about the advance and retreat of the equinox, if need be — even without all men (as you demanded) heaping all their learning into one pile. Would that a remedy could as easily be provided for your mind! Then you would surely understand that our Calendar needs no other remedy.

FROM what has just been said, an easy answer can be given to the third argument — that is, to the examples of future years, by which the adversary tries to prove that the equinox slips forward from 21 March to the 22nd and 23rd. For it must be said that this necessarily has to happen, on account of the unequal magnitude of the solar year, to which no uniform and regular equation can answer in every part, as we showed in the preceding Chapter. For since at this time we are nearly at the greatest magnitude of the year, what wonder is it that the equinox in the years 1800 and 1900 rolls down toward the end of the month, since our regular and uniform equation removes more intercalary days than the greatest magnitude of the year requires? And although in these years the true equinox, on account of our equation, falls after 21 March, this is nevertheless not absurd, since — following the Prutenic Tables, which in the centennial years roll the equinox down toward the end of the month — it returns afterward to the same 21st day. For in the years 2080, 2296, 2512, and others, the equinox will again be found on or about the 21st day, as is clear from the preceding Chapter (which we have also indicated more than once above).

[Margin: Solution of Maestlin's third argument. Why the equinox in the coming centennial years slips down from the 21st day toward the end of the month.]

MOREOVER, the reader, I think, must be warned at this point (as I have often noted above) that my adversary, in all those years, is employing the true equinox from the Prutenic Tables — which does not bear on the matter we are treating; for we in our equation are speaking of the mean equinox according to the Alphonsine calculation. And it has been shown above that this mean equinox in general nearly always stays midway in the advance and retreat of the true equinox (from the doctrine of Copernicus) from the 21st of March toward the

beginning of the month and toward the end. That we are speaking of this [mean equinox] is plainly clear from the equation to be applied every four-hundredth year, which suits only the Alphonsine year, and which through many ages will so keep the true Copernican equinox near the 21st day that it cannot wander far from it — which is quite enough for the use of the Church, that the feast of Easter may be celebrated at the same time throughout the whole Christian world.

[Margin: The equinox, reckoned by the mean year, uniformly anticipates by one day in 134 years, on Maestlin's own testimony.]

NOR indeed did Maestlin fail to recognize this — so much so that, if he had wished to judge the Calendar with a calm and tranquil mind, he could not but have thought the same and persuaded everyone of it (had not his hatred of the Roman Pontiff drawn him away from this counsel), namely, that with the old one exploded they should adopt the new Calendar. For not far from the beginning of Chapter 1 he writes as follows:

A tropical year [annus tropicus] is indeed 365 days, 5 hours, 49 minutes [Scrup.], 16 seconds — that is, it falls short of a quarter of a day, or of six hours, by about 10 minutes and 44 seconds. Hence in 134 years the anticipation amounts to nearly one whole day, and in 402 years to nearly a full three days [triduum].

See how Maestlin, compelled by the force of truth, asserts the very thing we do — namely, that the equinox, according to the mean magnitude of the year (which is even), always advances evenly toward the beginning of the month, so that in any span of 402 years its advance takes in a full three days.

FOR the rest, driven on by his perversity, he returns to his old bent, and knowingly and willingly rushes headlong, when he at once adds that we ought, setting aside the mean, to consider the true [equinox] this year — which can by no means be granted in ecclesiastical and political matters. For he himself laid down above that no one among the politicians and common folk should be burdened with astronomical subtleties; and we have shown fully enough in Chapter 4 that the Church ought to employ mean rather than true motions in the celebration of the movable feasts.

[Margin: The Church does not sin against God because its equinox sometimes stands one or two days off from the true one, since it returns beyond, to the 21st day — just as the same Church did not sin before the correction in placing on the 21st day what fell on the 11th. When it is a sin not to celebrate Easter at the proper time, and when it is not.]

NEXT, after nearly one page, he speaks thus as well:

But if someone should object that the celestial motions are bound by such equations that whatever is taken away in one place is restored in another, so that by a mutual compensation it will come about that the true vernal equinox returns to 21 March: I answer that, although equations must be added in one place which are subtracted in another, their restitution is nevertheless not completed except after some hundreds, or even thousands, of years, as will be said shortly; and in the meantime, throughout all that time, the Church would be polluted with sins — and indeed most absurd ones (for so are errors of this kind named by the author of the Calendar, in Canon 2) — since, persuaded by Pope Gregory XIII, she would falsely believe that the vernal equinox — not the mean, but the true — always keeps its fixed seat on 21 March. Hence it will come about that Easter (as will be shown below), even though it be observed according to the prescription of the Calendar, will nevertheless not be celebrated at the fitting time. Here, then, once again behold the certitude of your Calendar.

By these words Maestlin again clearly testifies that our uniform and even equation compensates the slowness and the swiftness of the anticipation of the true equinox according to the unequal and irregular year. So that it now appears he has waged so fierce a war against the Calendar in vain. For even if this compensation is not made except after some hundreds, or even thousands, of years, yet in the intervening time the Church will not recede far from the true equinox, so that she cannot on that account be said to pollute herself with most absurd sins (with which indeed Maestlin himself is polluted, when he casts these charges at the Church) merely because she departs a little from the true equinox.

[Margin: The Church does not sin against God because its equinox is sometimes one or two days distant from the true, since it returns beyond, to the 21st day: just as the same Church did not sin, before the correction, in establishing on the 21st day what fell on the 11th.]

For never did Pope GREGORY XIII, in the Bull of the Calendar, try to persuade the Christian people that the true equinox, according to the restitution of the Calendar, always keeps a fixed seat on 21 March; he spoke only of the mean, or rather of the equinox of the mean and even year, which cannot be far from the true if the equation of 400 years is applied — since the difference is not great, and scarcely grows beyond two or three days; so that even after 20000 years and more the true equinox will still be found on or about 21 March, as in the Prutenic Tables, provided that equation of 400 years is not interrupted. And indeed, if

before the correction of the Calendar the ecclesiastical equinox, which was thought to be 21 March, was 10 days distant from the true, and yet no one, unless impious, ever said that the Church had sinned against God: who will be so shameless and bold — save Maestlin alone — as to make the Church guilty of sin, if after the restitution of the Calendar the ecclesiastical equinox should sometimes differ from the true by one, or at most two, days, especially since of itself, with no other remedy applied, it returns to its seat?

[Margin: When it is a sin not to celebrate Easter at the due time, and when it is not.]

AS FOR celebrating Easter at an unfitting time, if the Church follows the mean and not the true equinox: I answer that it would indeed be a most absurd sin if someone were deliberately to prescribe the Paschal termini [termini Paschales] in such a way that Easter should be celebrated not at the lawful time, and contrary to the decrees of the Fathers and Councils, when he could arrange them otherwise, and indeed more aptly. But when, from the nature of the Cycles — which ought to agree with the mean motions rather than the true — it sometimes happens that Easter is celebrated not at the lawful time, so that this error cannot be avoided unless the true motions are adopted (which we have shown, in Chapter 4, ought not to be done), then it ought not to be reckoned a sin. For no Cycle can be so perfect and complete in all its numbers as to be able to avoid every error, as we have said above and will explain more clearly in Book 2, Chapter 5. See therefore, Maestlin, the certitude of our Calendar — which you would rather not see — a certitude as great as it can be through the Cycles to which it is necessarily bound; nor will you ever overthrow it, though you bring all your engines to bear.

BUT let us look at yet one passage of our adversary, where he again concedes that the mean equinox, if the equation of 400 years be applied, can keep a fixed seat on some certain day for many centuries. This passage is at the end of the first Chapter, where he inveighs against the new Calendar thus, a man full of laughter:

It is no less ridiculous that the authors of this Calendar, who ought to be mathematicians, compute the motion — or anticipation — of the true equinox no otherwise than as a mean motion. But what, I ask, can be said more absurd in astronomy? Since all astronomical science consists chiefly in this: that it teaches how unequal the true or apparent motions are, and how much they differ from the mean. Wherefore, although the mean equinoxes, hitherto, by this omission of three days [triduum] within 400 years, could perhaps for many ages (yet not for all, as appears in my

Dialexis, Chapter xi, Observation iv, on the second astronomical defect) keep a seat almost fixed on one certain day: yet this affair does not concern the mean vernal equinox, which falls not on the 21st, but on the 23rd of March. Since, then, the authors of the Calendar did not weigh this, they set themselves up splendidly to be laughed at, in that they hallucinate in matters that ought to be known to the beginners of any astronomy. But just as the true equinox can recede from the mean by a whole four days [quatriduum] into the preceding signs (as was said above concerning the year 1200 — for in that year the true equinox was earlier than the mean by four days, namely by as much as the 19th is distant from the 23rd; which is wont to happen whenever both the prosthaphaeresis [prosthaphaeresis] of the equinoxes and the annual anomaly of the Sun are at their maximum, and additive): so, when both will be at their maximum and subtractive (if the world should last so long — although the new Calendar knows nothing of any last day, otherwise it would not continue its Canons to 40000 years after the birth of CHRIST), there again the same true equinox will follow the mean, likewise by four days, and will fall on the 27th day of March. Where here is the 21st of March? By your own praises, you Mathematicians, you seem to have raised your Calendar too high above the stars, so that its equinox, seized by vertigo, nodding this way and that, has at last fallen from its seat — which you fixed as firm for it on 21 March — and slipped down into those other days. Come to the aid, then, of your client, lest by too much erring it utterly delude and shame you, as follows presently. For I add this too, which I would have you consider. In this our century, while the apogee [apogaeum] of the Sun still lingers near the summer solstice, so that the prosthaphaeresis of the annual anomaly — which is owed to its motion on the day of the vernal equinox — is not only additive but nearly maximal: therefore the true equinox itself, on account of the prosthaphaeresis of the equinoxes (now to be added, now to be subtracted), nods from the 21st day and swings back to the 19th and to the 23rd of March. But because of the descent of the apogee toward Libra, it comes about that this additive prosthaphaeresis is gradually diminished, until at length it is wholly annihilated. But when the apogee of the Sun shall have passed the earlier parts of Libra, the same prosthaphaeresis...

(The chapter, Caput VII of Liber Secundus, continues from the previous leaf; these pages carry on within Maestlin's quoted objection and Clavius's reply. The passage opens mid-sentence — catchword from the prior leaf: "-sthaphaeresis.")

...the prosthaphaeresis, which yields to the day of the true vernal equinox, will be increased once again — but under the heading of *subtraction*, and so forth. From this it necessarily follows that the reciprocal shift of the equinoctial day no longer depends on 21 March, but passes over to the 22nd, 23rd, 24th, and up to the 25th of the same month, oscillating from each of these likewise by two days before and two days after. And so it will come about — I speak once more according to the reasoning of the new Calendar, which has no last day — that the true vernal equinox will at last desert 21 March entirely, so that not even by any oscillation will it be able to reach that day again. This will happen around the year of Christ 4700. For although this same equinox will meanwhile spend the greater part of that period outside 21 March, wandering through the 20th, 22nd, 23rd, 24th, and 25th, it will nonetheless still occasionally swing back to the 21st. But once the year 4700 has been reached, its return to 21 March is never again to be expected, until 15000 years after Christ have been completed. Consider once more, you mathematicians, how PERPETUAL and FIXED is the seat of your equinox on 21 March! You see here that for ten thousand years and more it will be found not on the 21st, but on the 22nd, 23rd, 24th, 25th, 26th, or even the 27th of March. And this is still to be so during the very time for which this new Calendar promises itself the most perfect certainty; for I have not yet carried my reckoning so far, but that the Calendar's own author has extended his calculation to far more remote years. So then, you defenders of the new Calendar, you see what an exquisite Calendar you possess — one that, like a stubborn and untamable horse, will neither go forward nor back; nay, one that is caught out as false at the very threshold, since it will neither return, nor is able to return, to its first station as to its native place; in which, moreover, for the 21st day all the rest from the 19th to the 27th are thrust upon you together; and in which the true vernal equinox for the most part falls on those other days, more rarely — indeed, if you examine the whole revolutions of the said anomalies, most rarely of all — on the 21st. What confusion all this brings into the Paschal feast will appear from what follows. You can therefore no longer doubt that you have not only been wretchedly deceived yourselves, but also — that you might not be wretched alone — have by your Counsels and approvals led others, too, to accept this faulty Calendar. But what, meanwhile, of your conscience? Answer, if you can.

Here indeed this Tübingen Thraso, somewhat more cheerful, as though he had won a victory, rages against the Calendar. Yet in this wordy display — if you set aside the few words in which he affirms that the mean equinoxes, by the omission of three days within 400 years, could perhaps for many ages hold a nearly fixed seat on one certain day — good God, how many falsehoods, how many empty and absurd things does it contain! [Margin: It is not ridiculous, but necessary, that the *mean* equinox, and not the *true*, be considered in the Calendar. Maestlin rashly wishes to bind the Church to the true motions.] First: how can it be ridiculous that the authors of this Calendar reckon the anticipation of the equinox after the manner of a mean motion? And, by the same token, how can it be true that in this business of the Calendar the concern is not with the *mean* vernal equinox, when it has been shown by many arguments in Chapter 4 that the Church, in celebrating the solemnity of Easter, employs only the mean motions and sets the true ones aside? Since the authors of the Calendar weighed this, let the adversary see to it that he does not (as he charges *them* with doing) make himself thoroughly ridiculous, in that he blunders over what ought to be plain to any beginner in ecclesiastical computation — namely, that the Church adopts the mean motions, or rather the Cycles, and sets the true motions after them. Let him beware, too, lest he show himself ridiculous and rash, when a man of no worth or judgment presumes to impose laws on the Church, and rashly to cast out from her long-standing custom and possession the Cycles, or the mean motions, and to bind her to the true motions — especially since he himself asserts, as we showed above, that astronomical subtleties in truth contribute nothing to the civil year, and that the Fathers of the Council of Nicaea gave no instruction about these niceties. In which matter, indeed, if he had set his mind on lying, he ought (as the proverb has it) to have kept a better memory.

[Margin: Maestlin falsely asserts that the mean equinox falls on 23 March, and that it can differ from the true by four days.] Next, I do not see from what astronomy this Tübingen Ptolemy has learned that the mean equinox falls on 23 March, and that the true can sometimes be distant from it by a whole four days. [Margin: How far the mean equinox can differ from the true.] For if the difference between the true and the mean equinox is the interval answering to the equation of the precession of the equinoxes [aequatio praecessionis Aequinoctiorum], and this equation, by the Prutenic Tables, never exceeds $1^{\circ} 11' 22\frac{1}{2}''$ [the fraction on $22''$ is small type — reading probable], then the one cannot possibly be distant from the other by $1\frac{1}{2}$ [?] days, as we set forth at length in the preceding Chapter. Therefore, since at this time the true equinox falls on 21 March — indeed, on Maestlin's own testimony, rises to the 20th — the mean equinox cannot fall on 23 March, but necessarily occurs before that day.

Moreover, in the year 1653, which is not very far from the present time, when the anomaly of the precession of the equinoxes begins its period anew, the equation of the precession of the equinoxes will be nil, and therefore both equinoxes will fall together on 20 March after midnight, as we said in the preceding chapter. Where here lies the 23rd for the mean equinox? Are the 20th and the 21st the same as the 23rd? For my part, from the arithmetic I had to learn (for so you jest at us), I cannot recognize one and the same day among these three. But if you have a new arithmetic, please share it with others too, that you may not be the only one to seem wise.

[Margin: Maestlin rashly contends that the equinox can be carried forward to 27 March.] Now, that the true equinox will at some time slip forward as far as 27 March — as you jibe — because, once the Sun's apogee is set in Libra, the equation of the precession of the equinoxes must be subtracted: this I have not yet been able to discover, not even from the calculation of many thousands of years, as is clear from the next Chapter. For what of it? Will not the Sun's apogee stand, in the year 6004, in the 20th degree of Libra, and yet the equinox not pass beyond the limits of the 23rd? Surely the 23rd and the 27th differ greatly. Will not the equinox fall a little after the 23rd, when the Sun's apogee resides in the 10th degree of Sagittarius? [Margin: Why it is not absurd that the Church should sometimes stray from the true equinox after the correction.] But grant that after 4700, down to the year 15000, the equinox altogether deserts 21 March and slides to the end of the month, as you contend: will it not, after that year 15000 — even on your own showing — return to 21 March? And if it seems harsh to you that the Church should stray from the true equinox throughout the whole period that lies between the years 4700 and 15000, remember that before the new Calendar it was a full 10 days — and that around the time of men's offense — away from the equinox; so that it is no wonder if, sometimes after the correction of the Calendar, it differs from it by two, or at most three, days; which indeed happens on account of the unequal progression of the equinox, if the Prutenic Tables tell the truth — although

from this error, too, the Church can easily free itself, should it seem good, if she prescribe that some days be intercalated, out of the ordinary course, into a single year, as we advised above — though this is not necessary, since of its own nature the equinox, after some interval of time, returns to 21 March; which did not happen before the correction.

[Margin: Maestlin's buffoonish mockery concerning the "last day" in our Calendar.] For as to what Maestlin, with more than scurrilous garrulity, has here

rashly blurted out — and elsewhere, too, harps on to the point of nausea — that the new Calendar knows nothing of any last day, because in it the reckoning is extended to 40 thousand years after the birth of Christ: who does not see that these are mere trifles, and that this was put forward by him not so much to overthrow the Calendar as to have something to say? For the new Calendar takes many years and ages into examination, not on account of a last day, but for the sake of the Calendar's perpetuity. Certainly all astronomers teach that their tables are accommodated to many thousands of years, and yet no one has ever on that account said that they believe nothing about the last day of the world. But if Maestlin thinks that the author of the new Calendar acknowledges no last day, because he extends his reckoning over many years, then, by his logic, it will not be permitted to anyone to extend any calculation over 1000 years — indeed, not even over 100, or fewer — since no one would dare to affirm for certain that so many years remain before the last day. Yet let this religious and timid man — whose ears, like those of blessed Jerome of old, the dreadful trumpet of the Last Judgment resounds about — take care not to seem too impudently jesting in so grave a matter; a man who, I rather think, would not have tried to burden the ears of the faithful with so many and so absurd falsehoods, and to disturb the peace of the Church, if he believed that on that last day an account must be rendered to GOD even for idle words. [Margin: Matthew 11.]

Nor, Maestlin — as you insinuate — do we lift the Calendar to the stars, so that there is danger lest its equinox, seized by a vertigo (as you yourself jest, perhaps not without some giddiness of the head), by oscillating this way and that, should at last slip from its seat, which we have fixed firm for it on 21 March. Rather, we adorn it with modest and truthful praises, since in it the equinox is so fixed to 21 March that, at this time and for very many ages to come, it oscillates reciprocally about it (to use your own testimony) as far as the 19th and the 23rd of March — so that, by this observation, 21 March is the middle term between the 19th and the 23rd of March, and is therefore rightly to be retained as fixed in ecclesiastical computation, in which not unequal, but chiefly equal, motions ought to be considered, as is clear from what precedes. See, then, whether it is not you who need people to relieve your vertigo, rather than the Calendar's.

We defenders of the new Calendar, for our part, are not sorry how exquisite a Calendar we have — one such that, like a tamed and gentle horse, it both goes on and advances with no trouble, however the case demands. For it so keeps and guards the equinox, according to the mean magnitude of the year, in the seat we have assigned it on 21 March, that for many ages of years it holds steady, while the true equinox, by the Prutenic Tables, wanders freely to and fro about the

mean equinox. What more could be desired in ecclesiastical computation? For that this conservation of the mean equinox in no way disturbs the Paschal feast, we shall show hereafter. Wherefore — I address you in your own words — there can no longer be any doubt for you (if any soundness remains in you) but that you see you have not only been wretchedly deceived in attacking this praiseworthy work of the Calendar, but also (that you might not be wretched alone) have, by your perverse Counsels and censures, wrongly and unjustly dissuaded others, too, from receiving this amended Calendar. But what, meanwhile, of your conscience? Lay aside, I beg, that inveterate hatred against the Roman Pontiff, and embrace the new Calendar together with the whole Catholic world. For you will find, if you are willing to judge the matter without love, without hatred, and without envy, that the Pontiff's Calendar is not so faulty as you persuade yourself, but that it nonetheless brings its praisers more credit than it brings its disparagers discredit.

[Margin: Solution to Maestlin's 4th argument.] To the fourth argument as well — by which Maestlin tries to show that our equation does not agree with past years — an answer can easily be made from what has been said. [Margin: That the equation of the new Calendar does not correspond exactly in certain past and future years.] For although an astronomical calculation duly established can be extended even to earlier times, our equation, to be applied at every four-hundredth year, cannot on that account square exactly with all past years — just as it cannot with future ones, as we said in the solution of the previous argument. For since our equation is uniform and equal, whereas the progression and regression of the equinox is unequal, owing to the unequal magnitude of the solar year, it can be perfectly in accord with the celestial motions neither when drawn back to past years nor when extended to future ones, as we declared in the preceding Chapter. It is enough that our equation should present the true equinox, whether it is fitted to past years or to future ones — yet in such a way that it presents the equinox not far from the truth. This the equation of the new Calendar entirely accomplishes. For it answers wonderfully to the times of Ptolemy, who flourished around the year of the Lord 130, since it then presents the vernal equinox on 22 March, on account of the 11 days that would have been removed down to the correction — in the years 200, 300, 500, 600, 700, 900, 1000, 1100, 1300, 1400, 1500 (for the remaining centennial years, 400, 800, 1200, would have stayed bissextile) — had our equation then been in use: on which day Ptolemy observed it to occur, very nearly. Again, the same equation most exactly keeps the equinox on 21 March in several future years, namely around the years of the Lord 1655, 2080, 2296, 2512, 2724, 3156, 3368, 15004; at which times we made plain, in the preceding Chapter, that the equinox falls around 21 March.

Rightly, then, is our equation to be said to agree with both past and future years, since its equinox stands, as it were, in the middle of the progression and regression of the true equinox — that is, it falls now before, now after, and now together with it — just as the mean New Moons compared with the true New Moons. Since this is so, it is no wonder that the equinox of the year 1200, which the adversary sets as his example, does not, if our equation is applied, agree in every respect with the true equinox. For it cannot be that a uniform and equable equation, whatever it may be, should exactly answer to the true motion, as was explained in the preceding Chapter. And yet, if we are willing to consider the matter a little more attentively, we shall find that in that year our equinox is little distant from the true one. For the true vernal equinox then falls —

as the Prutenic Tables show, on 12 March at 6 hours after noon, so that it may not undeservedly be ascribed to the 13th. Therefore, if the use of the amended Calendar had been in force at that time, the 13th day would have been the 20th, because, of those 10 days omitted in the year 1582, the three later ones fall to the three centennial years between the year 1200 and 1600. And it is no wonder, nor anything new among astronomers, that the equinox in a bissextile year — such as the year 1200 was — falls on 20 March, if in a common year it falls on the 21st; since the equinox, on account of bissextile and common years, requires two days, as we said above.

[Margin: Solution to Maestlin's 5th argument.] In nearly the same way is Maestlin's fifth and last argument refuted, by which he shows — as he claims — that our equation does not agree with the times of the Council of Nicaea, on the ground that, drawn back to past years, it indicates that the equinox in the times of the Council of Nicaea fell on 20 March, not the 21st, as we assert; inasmuch as only 9 days would have had to be removed up to that time, in the years 1500, 1400, 1300, 1100, 1000, 900, 700, 600, 500, the remaining centennial years 1200, 800, 400 staying bissextile. For we reply, as we replied above, that our equation, being equable and regular, cannot agree to a hair with any and every year, whether past or future, on account of the irregular motion of the equinox; but that it is enough for it to answer to some, and in others to present the equinox little distant from the true one, as we explained a little before.

[Margin: Why the equation of the new Calendar, in certain past and future years, offers fewer days for removal than the case requires, and in others more.] As for the fact that our equation sometimes offers fewer days for elimination than it ought, if it is applied to years drawn back, this should seem no wonder, since at about the midpoint between the birth of Christ and the year of the correction,

1582 — that is, about the year 880, when al-Battānī [Albategnius] lived — the magnitude of the year was the least of all, and consequently the anticipation of the equinox the swiftest. For hence it comes about that in fewer years than 134 — that is, more frequently than our equable and uniform equation requires — the intercalary day would have had to be omitted then, on account of that least magnitude of the year; just as, in the years nearest to come, since the year is nearly the greatest, it would have to be omitted more rarely, if the equation were to answer exactly to the true motion. Since this is not done, on account of our equation, which we have established as always equal and uniform, it follows of necessity that, because the removal of the intercalary day would have to be made too frequently in the years 1700, 1800, 1900, the equinox slips somewhat forward from 21 March toward the end of the month, as we showed above.

[Margin: How the equation of the new Calendar, retracted to the times of the Council of Nicaea, presents 10 days for removal.] Further, it is not altogether true, as Maestlin says, that the equinox, if our equation is accommodated to past years, falls on 20 March at the time of the Council of Nicaea. For if our equation is recalled to earlier years, we shall find that 10 days are offered for removal down to the times of the Council of Nicaea. For in the year 300, from which the year of that Council was little distant, one day too would have had to be removed, had this equation then been in use; and consequently the equinox would be presented, around that time, on 21 March — so that our equation agrees not only with the years in which Ptolemy lived, but also with the times of the Council of Nicaea, which was celebrated not long after Ptolemy's times. Maliciously, then — or at any rate, what he least wishes to seem, ignorantly — did Maestlin act, when he drew our equation back only to the year 500, whereas he ought to have drawn it back to the year 300, which was nearer to that Council than the year 500.

[Margin: That the removal of 10 days was necessary, so that the equinox might be restored from the 11th to the 21st, whether or not the equation yields 10 days for removal down to the Council of Nicaea.] But if the adversary presses that, although the equation, drawn back to past times, removes 10 days down to the year 300 inclusive — which was near the Council of Nicaea — nevertheless, if the same equation had begun from the time of the Council and been extended down to our own times, it would remove only 9 days, as he himself assumed in his argument: it must be answered that this is not absurd, for the reason lately alleged — namely, because in the intervening time the year was at its least. It can also be said that the intercalary day was to be omitted in the year 400, because it was far from the Council — about 80 years distant — so that the equinox might be held in its seat; and therefore that, down to the year 1600 inclusive, 10 days had

to be removed in these centennial years — 400, 500, 600, 800, 900, 1000, 1200, 1300, 1400, 1600 — every fourth centennial (700, 1100, 1500), such as they would have been, remaining bissextile.

But however it may be — whether our equation answers exactly to the year of the Council of Nicaea, or not — it is certain and settled with us that 10 days had absolutely to be removed, so that the equinox might be recalled from 11 March, to which it had advanced, back to the 21st; just as, if it had had to be recalled to the 25th, the day of the Lord's Incarnation (which few desired), 14 days would have had to be removed — even though, from the Incarnation of the Lord down to our own times, the equinox has not anticipated its seat by so many days, since from Ptolemy's observations it is clearly established that at the time of the Incarnation of the WORD of GOD the equinox fell on 23 March.

And let these things have been said against the arguments of Maestlin, which he devised so maliciously and craftily against the equation of the solar year prescribed in the new Calendar. [Margin: A general reply to all the arguments that can be brought against the equation of the new Calendar.] Yet to these, and to all the other objections that can be brought forward, it will be possible to reply, if we say that all his arguments are taken from the true motion, drawn from the Prutenic Tables — which is very unequal and irregular, and cannot be accommodated to any Cycle; whereas our equation rests on the mean motion, which is equal, and on the magnitude of the mean year, which is likewise regular and equable. And so, by its stability and equality, it beautifully and neatly compensates for the unequal and irregular progression and regression of the true equinox, over many thousands of years, so that the equinox of this equation never recedes from the truth by more than two days at most, or a little more — now anticipating it, now following after. And this is enough for the due celebration of Easter, by the Decree of the Church, which, in the reckoning of time, employs and considers, from most ancient custom, motions not unequal but regular — or rather Cycles — the true and non-uniform motions being set aside.

But if perchance, over a long interval of time, it should happen (which we frankly confess can occur, on account of the inconstancy of the astronomical tables) that the equinox of the new Calendar has departed from the truth more than is fair, the true equinox will have to be restored — as has often been said — to 21 March, by an intercalation, or by an omission of intercalation, applied out of the ordinary course; and thereafter either the same formula of equation as before is to be retained, or else another more suited to that time is to be prescribed, according to the judgment of the astronomers — yet in such a way that in the Cal-

[Margin: Why the new Calendar is called perpetual by the Pontiff.]

the Calendar, so far as concerns the arrangement of the Epacts, no change is made. On this account, even though the equinox may at some time need to be restored, or the method of the equation to be altered, the Calendar itself is nonetheless called perpetual in the Pontiff's Bull, and of such a kind that it can be adapted to any magnitude of the year whatever, by means of an interrupted or a varied equation, while the Calendar itself, together with the Epacts, remains meanwhile untouched, stable, and wholly unchangeable — as will be more plainly explained in the eleventh book, in the equation of the Moon.

[Margin: That no Calendar can be constructed in any other way than that in which the Gregorian was constructed, so as to be perfect and perpetual, or long-lasting.]

[Margin: What is required for any Calendar to be called complete and long-lasting.]

Therefore, what argument, in the end, can be devised that would have any force against the Calendar as being perpetual in the sense stated? For although the equation of the solar year may, over a long time, fail to keep the equinox so fixed on the 21st day that it needs no correction, the Calendar ought not on that account to be judged faulty or imperfect; since, with nothing in it changed, the equinox can be corrected without any trouble, by an equation varied in some way, if that should seem good. And certainly no Calendar can be constructed in any other way than the one described, such as to be either perpetual or long-lasting — seeing that everything the astronomers have handed down, subtly and acutely, concerning the magnitude and inequality of the solar year, is uncertain and doubtful, so that concerning no equation of it, whether framed with reference to the mean motion or to the true, can we promise ourselves a constant, perpetual, or lasting truth.

[Margin: That Maestlin, had he wished, could have understood its perfection from the Compendium of the Calendar's restitution.]

But if some equation of the solar year is instituted — together with the lunar cycle laid out through the days of the Calendar — by such an artifice that nothing ever need be renewed in the Calendar, even should some error be detected in the equinox as it is kept in its fixed seat, so that the equation of the solar year must be altered by the method we set forth above: then at last the Calendar itself may rightly and deservedly be reckoned perfect and complete. Of this kind is the new Calendar published by Gregory XIII, Supreme Pontiff, in the year 1582 — as is

partly clear from what has been said, and will appear partly, and indeed much more evidently, from what will be said. Had Maestlin weighed these things with a sincere and untroubled mind, he would assuredly not have poured out so many words and revilings against the new Calendar so rashly. And indeed, had he not been hindered by the utmost malevolence and envy against the Roman Pontiff, he could have understood all this without any trouble from the Compendium of the Calendar's restitution, sent to the Christian Princes, where it is most openly declared that the cycle of the Epacts can be adapted to any magnitude of the year whatever. So much so that, once it is described in the Calendar, and once the method of intercalation is applied in every four-hundredth year, as we have said, together with the equation of that cycle too, of which we shall treat below, the years and months will thereafter so agree with the reckoning of the Sun and Moon that no further variation or disagreement of any moment can arise. And should it ever happen that some discrepancy does arise, the same Compendium plainly testifies that everything can be restored to its own state by the easiest method. For this very reason a double table of the equation of the Epacts was constructed in it: one agreeing with the Alphonsine year, which is mean and uniform, the other answering to Copernicus's year, which is unequal and irregular — so that no one can justly object against us that we did not foresee what might be urged against the Calendar, or did not understand in what sense it can be called perpetual and never liable to any change.

But concerning the defence of the Calendar so far as it pertains to the equinox, enough. It remains for us to defend the Epacts as well, the Dominical letters, and the movable feasts of the same Calendar, against the same Tübingen Mathematician.

LIBRI PRIMI FINIS. [End of Book One]

[p. 41]

APOLOGIÆ CALENDARIII NOVI ADVERSVS MICHAELEM MÆSTLINVM Mathematicum Tubingensem — LIBER SECVNDVS

[Apologia for the New Calendar, against Michael Mästlin, Mathematician of
Tübingen — Book Two]

QVO PACTO CYCLVS DECENNOVENNALIS annos 19. Solares exæquet.

[In what manner the Nineteen-Year Cycle equalizes 19 solar years]

CAPVT I.

Having dispatched, in the previous book, the matters pertaining to the equinox, it remains for us in this second book to treat of the new moons and full moons, according to the use and custom of the Church, and to dissolve all the adversary's arguments by which he assails the new moons, the fourteenth days of the Paschal moon, and the cycle of the Dominical letters. First, then, let us set out by what reasoning the nineteen-year cycle of the golden number agrees with 19 solar years.

The lunar year, just as we said of the solar year in Chapter V of the preceding book, is twofold: the one civil or political, the other astronomical.

[Margin: The civil lunar year: what it is, of how many kinds, and how great.]

The civil year consists of whole days and is itself twofold: the common and the embolismic. The common year contains now 354 days, now (which rarely happens) 353; the former of these is usually called full, the latter hollow or deficient, and each comprises 12 lunations. The embolismic year, however, contains for the most part 384 days, but sometimes (though more rarely) 383. The former of these too is called full, the latter hollow in the same way, and each is comprised in 13 lunations. Nor can the civil lunar year be arranged or reckoned in the Calendar otherwise than by whole days, any more than the solar year can; the reason for which we have set forth abundantly in Chapter V of the preceding book. For the same reasoning of the solar year applies to the lunar.

[Margin: The astronomical lunar year: what it is and how great.]

The mean or equalized astronomical lunar year — for concerning the true one, since it is quite unequal and variable and belongs to the astronomers' province, nothing need be said here — comprises, beyond whole days, some hours and fractions of hours.

[Margin: The magnitude of the lunar month according to the mean motion.]

Thus the common year of 12 lunations contains 354 days, 8 hours, 48 minutes, 38 seconds, 12 thirds, nearly; while the embolismic year of 13 lunations contains about 383 days, 21 hours, 32 minutes, 41 seconds, 23 thirds. For a single lunation,

that is, a lunar month, reckoned by the mean course — the interval of time from one mean new moon to another — comprises 29 days, 12 hours, 44 minutes, 3 seconds, 11 thirds, nearly, according to the Prutenic Tables, which today are held to be more reliable.

[Margin: The magnitude of the lunar month according to the computists, greater than is right.]

This magnitude of the lunar month differs little from that which Ptolemy and Nicolaus Copernicus have handed down to us, and which is described in the Alphonsine Tables — so that I greatly wonder where the computists can have found the magnitude of a single lunar month to be 29 days, 12 hours, 44 minutes, 3 seconds, 3 thirds, when all astronomers make it greater. From the magnitude of the lunar month that we have established, it follows that half a lunar month comprises 14 days, 18 hours, 22 minutes, 1 second, 36 thirds; and a quarter of the same lunar month, 7 days, 9 hours, 11 minutes, 0 seconds, 48 thirds.

[Margin: The magnitude of the civil lunar month.]

And although this reckoning of the lunar month by days, hours, and fractions of hours cannot be written in the Calendar, which contains only whole days, knowledge of it is nonetheless quite necessary, so that the civil or political lunar months may be so instituted as to be able to agree with the solar year. And in what manner this is done by means of the nineteen-year cycle must here be explained.

[Margin: Why the lunations in the Calendar are alternately of 30 and 29 days.]

Accordingly, in the nineteen-year cycle the civil lunar month is fixed at 29 days and 12 hours only, the fractions of hours being omitted. And since hours cannot be written in the Calendar, the numbers of the nineteen-year cycle are laid out for finding the new moons by this device: that the lunations contain alternately 30 and 29 days. For thus it comes about that the 12 hours assigned in excess to the preceding lunation are taken away by the following one, and two lunations together comprise 59 days, while twelve lunations comprise 354 days, which make up the civil lunar year.

[Margin: Why the new moons in any year usually occur 11 days earlier than in the immediately preceding year.]

And therefore the common civil lunar year differs by 11 days from the common solar year of 365 days. From which it follows that the new moons of the following year usually occur 11 days earlier than the new moons of the preceding year; so

that if, for example, some new moon falls on the 29th of some month in this year, the same will fall on the 18th of the same month in the following year, and on the 7th in the third year, and so on, until 19 years are completed, after which that new moon falls once more on the 29th day [connective word illegible: [?]]. This is because all the lunar months contained in 19 solar years comprise nearly as many days and hours as the 19 solar years are made up of. For the 19 solar years (if you assign to each

[Margin: How many days the 19 solar years contain.]

each, from the institution of Julius Caesar, 365 days and 6 hours) contain 6939 days and 18 hours, in which are completed 235 lunations and something more, according to the mean course of the Moon; and just as many lunations are included in those same 19 solar years.

[Margin: In 19 solar years there occur 235 mean lunations.]

For the 235 mean lunations require 6939 days and, over and above, 16 hours only, 32 minutes, 28 seconds, 5 thirds; so that the 19 solar years exceed the 235 lunations by 1 hour, 27 minutes, 31 seconds, 55 thirds.

[Margin: How great is the difference between the days of the 19 solar years and the days of the 235 mean lunations.]

Hence it comes about that the mean new moons, when 19 solar years have passed, indeed fall on the same days of the months on which they fell 19 years before, yet not at exactly the same hours, but somewhat earlier — by that ratio of excess, of course, which we have mentioned. So very small is the interval of time by which the Moon, over 19 years, runs ahead of the seats fixed for it in the Calendar.

[Margin: How great is the anticipation of the mean lunations in 19 years, and how great in 76.]

From which it follows that in 76 years — that is, in 4 nineteen-year cycles — the Moon anticipates the same seats by 5 hours, 50 minutes, 7 seconds, 40 thirds; and at length, in $312\frac{1}{2}$ years, by nearly a whole day.

[Margin: The mean lunations anticipate one day in $312\frac{1}{2}$ years.]

Hence it has come about that the new moons, from the Council of Nicaea down to our own age, have advanced toward the beginnings of the months by four days and more.

[Margin: In 19 solar years are contained 235 civil lunations.]

That 235 civil lunations are contained in 19 solar years we shall make plain thus. Since in any single year there are 12 lunations of 30 and 29 days alternately, which make up 354 days, there will be in 19 years 228 lunations, and in addition 209 days, made up of the 11 days by which the solar year exceeds the lunar, as we said above. From these 209 days are constituted 7 extraordinary lunations, called embolismic — six of them of 30 days each, and one of 29 days, as we shall say below. And these seven extraordinary lunations, added to those 228, make up the number of 235 lunations. Rightly, therefore, is the lunar cycle said to comprise 19 solar years, since in this space of time are completed 235 lunations — precisely as many as can occur in the same interval according to the mean course of the Moon — except that there remains that difference we mentioned, of 1 hour, 27 minutes, 31 seconds, 55 thirds.

[Margin: In what way the 235 civil lunations contained in 19 solar years fill out the time of just as many mean lunations, even though in each one 44 minutes, 3 seconds, 11 thirds are omitted.]

But let us show a little more precisely in what manner the 235 civil lunations comprised in 19 solar years fill out the time of just as many astronomical lunations, according to the mean motion. For since in the civil lunations the fractions of an hour — namely 44 minutes, 3 seconds, 11 thirds of one hour in each lunation — are dropped, the civil lunations do not seem able to be equated with the astronomical ones. Nevertheless, you will learn from this that those dropped fractions are very neatly compensated by the bissextile days and the seven extraordinary lunations.

If the 235 civil lunations are each assigned $29\frac{1}{2}$ days — that is, if we make them alternately of 30 and 29 days, which we said the cycle requires — they make up 6932 days and 12 hours.

[Margin: In what way the 235 civil lunations contained in 19 solar years fill out the time of just as many mean lunations.]

But just as many mean astronomical lunations comprise 6939 days, 16 hours, 32 minutes, 28 seconds, 5 thirds. To fill out this time, then, the 235 civil lunations fall short by 7 days and $4\frac{1}{2}$ hours and a little more; and this deficiency is supplied as follows.

[Margin: Whence in 19 years are supplied the 44 minutes, 3 seconds, 11 thirds which are omitted in each civil lunation, together with the 12 hours taken away from the last extraordinary lunation.]

In the whole nineteen-year cycle, beyond the whole days of the solar years, there remain 114 hours, gathered from the 6 hours dropped in each year, which make up 4 intercalary days and 18 hours. The 4 days, then, in the 4 bissextile years, are assigned to the four lunations of February of 29 days, so that only 18 hours are wanting — those which, over the 19 years, besides the 4 intercalary days, we said were left over — and there will remain that same difference of 1 hour, 27 minutes, 31 seconds, 55 thirds, by which the 19 solar years exceed the 235 mean lunations. Fittingly and neatly, therefore, does the nineteen-year lunar cycle agree with the 19 solar years, since the 235 civil lunations comprised in them fill out almost exactly the time of just as many mean astronomical lunations, as we have set forth.

[Margin: Whence in 19 years are supplied...]

This will perhaps be perceived more clearly thus. The 228 civil lunations comprised in 19 solar years — if we assign to each year 12 lunations alternately of 30 and 29 days — make up 6726 days. If to these are added the 209 days gathered from the 11 days which, beyond the 12 lunations, are left over in each solar year, the sum will be 6935 days. If again there are added the 4 intercalary days and the 18 hours contained in the 19 solar years, there will result 6939 days and 18 hours, as many as are contained in 19 solar years. Thus, even though the 235 lunations — reckoning each at $29\frac{1}{2}$ days, except the last, which has only 29 days — make up only 6932 days, there are nonetheless inserted and added, out of the ordinary course, throughout the whole compass of the nineteen-year cycle, the remaining $7\frac{3}{4}$ days. These are gathered partly from the 4 intercalary days and 18 hours, partly from the 3 days which we assigned in excess to the six extraordinary lunations, so that the number of 6939 days and 18 hours is produced — as many as are needed, or nearly so, to complete the 235 mean astronomical lunations. For this time of the 235 lunations differs from that of the 19 solar years by only 1 hour, 27 minutes, 31 seconds, 55 thirds, as was said above.

[Margin: Meton of Athens, the inventor of the golden number, around the 86th Olympiad.]

And these $7\frac{3}{4}$ days inserted out of the ordinary course supply, approximately, those 44 minutes, 3 seconds, 11 thirds which are dropped in each civil lunation,

and the other 12 hours which we subtracted from the last extraordinary lunation — since we made it of only 29 days, whereas all the others contain $29\frac{1}{2}$ days, except the six earlier extraordinary ones, which each consist of 30 days. For 44 minutes, 3 seconds, 11 thirds, multiplied into 235 lunations, produce 7 days, 4 hours, 32 minutes, 28 seconds, 5 thirds; and if to these are joined those 12 hours dropped in the last extraordinary lunation, the number becomes 7 days, 16 hours, 32 minutes, 28 seconds, 5 thirds — which differs from the number of 7 days, 18 hours only by 1 hour, 27 minutes, 31 seconds, 55 thirds, the very difference which we said above exists between the 235 astronomical lunations, according to the mean course of the Moon, and the 19 solar years. This, then, is the reckoning of the nineteen-year lunar cycle, or golden number, which Meton of Athens is reported to have devised, by a truly marvelous artifice, around the 86th Olympiad — so that it was deservedly adopted among almost all nations for the investigation of the new moons.

Chapter II [Caput II]

In what way the golden numbers are arranged in the Calendar, and why, once they have been removed, epacts are substituted in their place.

Since the ancients had recognized that the new moons return to the same days once nineteen years have elapsed, they wrote into the Calendar a like number of numerals, from 1 up to 19, which they called "golden," beside those days on which, within each span of nineteen years, the new moons fell. Thus they set 1 before the day on which a new moon occurred while golden number 1 was current; 2 before the day on which the new moon fell while golden number 2 was current; and so on for the rest. In doing this they carefully saw to it that the lunations should be alternately of 30 and 29 days, and that the new moons of any one year should anticipate those of the preceding year usually by 11 days — on account of those 11 days by which the common solar year of 365 days exceeds the common lunar year of 354 days.

From this arrangement of the golden numbers there arose among them an order and sequence of such a kind that in the Calendar they do not keep the natural order of the numbers; rather, the larger number generally precedes the next smaller by 11 days, on account of those 11 days by which the solar year exceeds the lunar. So, for example, if golden number 1 is placed near some day of any given month, the next larger golden number, 2, runs ahead of it toward the beginning of the month by eleven days, ten days being interposed between them — because in the following year the new moon of that same month falls eleven

days earlier than the new moon of the previous year. In the same way, golden number 1 precedes golden number 19 in the Calendar toward the beginning of the month by eleven days — number 1 being the one that immediately follows 19 in the natural sequence of the numbers. And the same reckoning holds for the remaining golden numbers. Only very rarely does the larger precede the next smaller by only ten days, and much more rarely by twelve; yet this too happens from time to time, the nature of the nineteen-year cycle so requiring.

[Margin: In what order the golden numbers were placed in the Calendar by the ancients.]

Hence it comes about that in the Calendar each following golden number is constituted by adding eight to the preceding golden number — casting out 19, however, if the sum turns out greater than 19 — or (what amounts to the same thing) by subtracting 11 from the preceding golden number, first adding 19 if the preceding golden number was not greater than 11, so that the subtraction can be carried out. Conversely, it turns out that each preceding golden number is formed in turn by adding 11 to the following one — casting out 19, however, if the sum is greater than 19 — or (and this comes back to the same thing) by subtracting 8 from the following golden number, first adding 19 if the following number was not greater than 8.

[Margin: In the Calendar every golden number is generated from the one immediately preceding, by adding 8 or subtracting 11; and from the one immediately following, by adding 11 or subtracting 8.]

From this same arrangement of the golden numbers in the Calendar there follows a mutual linkage of the following sort: the following number, if it is smaller than the preceding one, follows immediately after it; but if it is larger, it follows not immediately but in the third place, one further day being left empty in between. This, however, is not observed in certain places of the Calendar; but occasionally, though rarely, the larger number does follow immediately after the smaller, the nineteen-year cycle necessarily demanding it — namely, so that the lunations may be constituted alternately of roughly 30 and 29 days. And so, once the golden number written at the beginning of January is known — whether it be set on the first day or the second (at the time of the Council of Nicaea, golden number 3 was placed at the first day of January; but now, after the correction of the Calendar, if the golden numbers were to be written into the Calendar, golden number 9 would have to be prefixed to the second day) — all the other golden numbers that follow will be formed from it by adding 8 or subtracting 11, as has been said, keeping this order: that a smaller number follows the larger immediately, but a

larger follows a smaller not immediately — a few places in the Calendar excepted, about which we shall say a little presently.

[Margin: In the Calendar the smaller golden number usually follows the larger immediately; but the larger follows the smaller not immediately, one empty day being left in between.]

Likewise, once the golden number that stands last in December is known — whether it occupies the final day or the next-to-last — all the other preceding golden numbers will be formed from it by adding 11 or subtracting 8, and so on. But since no single rule can be given for those places in which a larger number follows a smaller immediately — because it is not always the same golden number that is set at the beginning of January, or the same one at the end of December, but one succeeds another until all the golden numbers have in turn occupied the leading position, the equation of the Moon so requiring, as we shall explain below — we shall more easily set out these same golden numbers in the Calendar by means of the epacts written into the Calendar, whose disposition is both very easy and unchanging, as we shall show a little later.

[Margin: By what method, from the first golden number of the Calendar, or from the last, all the others are inscribed in the Calendar.]

Nevertheless, the arrangement of the golden numbers should not be passed over — the arrangement that the Church used in the Calendar before the Gregorian correction, and that it would now use after the correction, if golden numbers, and not epacts, were to be set out in it — so that it may be understood in how many places the larger golden number follows the smaller immediately. So then, placing number 3 at the first day of the year, as was done at the time of the Nicene Council, all the rest are formed by continually adding 8, always casting out 19 whenever the sum turns out greater than 19, and placing the smaller immediately below the larger, but the larger not immediately below the smaller — these few places excepted — so that the lunations come out alternately of 30 and 29 days. On 3 February let number 19 be written immediately below the smaller number 11. And on 6 April, 4 June, and 1 August, number 16 immediately below the smaller number 3. Likewise on 3 October and 1 December, number 13 immediately below the smaller number 5. Finally, once all the golden numbers have been arranged in this order, in July and in all the other five months following, up to the end of the year, let golden number 19 be moved up to the day above, so that it is placed immediately below the smaller number 11; and in those same months let the smaller number 8 be written not immediately below 19, but with one empty day left in between.

I am well aware that Campanus [Campanus of Novara] and some others place number 13 in December not on the first day but on the second, together with golden number 2. But since other considerations prevail in this matter — namely, that it would be absurd for two new moons to fall on the same day within a single nineteen-year cycle, such as those indicated by golden numbers 13 and 2, since on Campanus's arrangement these fall on 2 December — we have preferred, with the other computists, to write number 13 at 1 December, immediately after the smaller number 5 that is affixed to the last day of November. In this way, then, the golden numbers, according to the mind of the Council of Nicaea, were placed in the Calendar before the correction. But at the present time, after the correction, they would have to be placed as follows. Golden number 9 having been written at 2 January, all the rest would be formed by continually adding 8, as before, with these places excepted on account of the lunations alternating 30 and 29 days: on 5 February, 5 April, 3 June, 1 Augu-

[Margin: In which places the larger golden number follows the smaller immediately, in the old Calendar, and in the new one of the present time, if golden numbers were to be written in it.]

-st, 29 September, and 27 November, golden number 14 would have to be written immediately after the smaller golden number 6. Likewise, on the last day of December, golden number 19 would have to be set immediately below the smaller number 11. But come, so that this difference may become apparent, let us set before our eyes both Calendars, with the golden numbers arranged through the days of the year in the manner we have described.

There follows [SEQVITVR]:

THE ECCLESIASTICAL CALENDAR, which the Church used from the Council of Nicaea up to the correction of the year made by Gregory XIII.

*[The four columns of each month-panel are, as printed: **Aurei num.** (golden number) · **Literae Dñic.** (Dominical letter) · the source's unlabeled Roman-reckoning day column (Kalends / Nones / Ides + countdown numerals) · **Dies mensis** (day of the month). A blank golden-number cell means no golden number is printed for that day.]*

IANVARIVS (January)

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| iiij | A | CAL. | 1 |

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| | b | iiiij | 2 |
| xj | c | iiij | 3 |
| | d | Prid. | 4 |
| xix | e | NON. | 5 |
| viiij | f | viiij | 6 |
| | g | vij | 6 |
| xvj | A | [?] | 8 |
| v | b | v | 9 |
| | c | iiiij | 10 |
| xiiij | d | iiij | 11 |
| ij | e | Prid. | 12 |
| | f | IDIB. | 13 |
| x | g | xix | 14 |
| | A | xviiij | 15 |
| xviiij | b | xvij | 16 |
| vij | c | xvj | 17 |
| | d | xv | 18 |
| xv | e | xiiiij | 19 |
| iiiij | f | xiiij | 20 |
| | g | xij | 21 |
| xij | A | xj | 22 |
| j | b | x | 23 |
| | c | ix | 24 |
| ix | d | viiij | 25 |
| xvij | e | vij | 26 |
| vj | f | vj | 27 |
| | g | v | 28 |
| xiiiij | A | iiiij | 29 |
| iiij | b | iiij | 30 |
| | c | Prid. | 31 |

FEBRVARIVS (February)

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| | d | CAL. | 1 |
| xj | e | iiij | 2 |
| xix | f | iiij | 3 |
| | g | Prid. | 4 |
| viiij | A | NON. | 5 |
| xvj | b | viiij | 6 |
| | c | vij | 7 |
| v | d | vj | 8 |
| xiiij | e | v | 9 |
| | f | iiij | 10 |
| ij | g | iiij | 11 |
| x | A | Prid. | 12 |
| | b | IDIB. | 13 |
| xviiij | c | xvj | 14 |
| | d | xv | 15 |
| vij | e | xiiiij | 16 |
| xv | f | xiiij | 17 |
| | g | xij | 18 |
| iiiij | A | xj | 19 |
| xij | b | x | 20 |
| | c | ix | 21 |
| j | d | viiij | 22 |
| ix | e | vij | 23 |
| | f | vj | 24 |
| xvij | g | v | 25 |
| vj | A | iiij | 26 |
| xiiiij | b | iiij | 27 |
| ij | c | Prid. | 28 |

MARTIVS (March)

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| iiij | d | CAL. | 1 |
| | e | vj | 2 |
| xj | f | v | 3 |
| | g | iiij | 4 |
| xix | A | iiij | 5 |
| viiij | b | Prid. | 6 |
| | c | NON. | 7 |
| xvj | d | viiij | 8 |
| v | e | vij | 9 |
| | f | vj | 10 |
| xiiij | g | v | 11 |
| ij | A | iiij | 12 |
| | b | iiij | 13 |
| x | c | Prid. | 14 |
| | d | IDIB. | 15 |
| xviiij | e | xvij | 16 |
| vij | f | xvj | 17 |
| | g | xv | 18 |
| xv | A | xiiiij | 19 |
| iiiij | b | xiiij | 20 |
| | c | xij | 21 |
| xij | d | xj | 22 |
| j | e | x | 23 |
| | f | ix | 24 |
| ix | g | viiij | 25 |
| xvij | A | vij | 26 |
| vj | b | vj | 27 |
| | c | v | 28 |
| xiiiij | d | iiiij | 29 |
| iiij | e | iiij | 30 |

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| | f | Prid. | 31 |

APRILIS (April)

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| | g | CAL. | 1 |
| xj | A | iiij | 2 |
| | b | iiij | 3 |
| xix | c | Prid. | 4 |
| viiij | d | NON. | 5 |
| xvj | e | viiij | 6 |
| v | f | vij | 7 |
| | g | vj | 8 |
| xiiij | A | v | 9 |
| ij | b | iiij | 10 |
| | c | iiij | 11 |
| x | d | Prid. | 12 |
| | e | IDIB. | 13 |
| xviiij | f | xviiij | 14 |
| vij | g | xvij | 15 |
| | A | xvj | 16 |
| xv | b | xv | 17 |
| iiij | c | xiiiij | 18 |
| | d | xiiij | 19 |
| xij | e | xij | 20 |
| j | f | xj | 21 |
| | g | x | 22 |
| ix | A | ix | 23 |
| | b | viiij | 24 |
| xvij | c | vij | 25 |
| vj | d | vj | 26 |
| | e | v | 27 |

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| xiiij | f | iiij | 28 |
| iiij | g | iiij | 29 |
| | A | Prid. | 30 |

MAIVS (May)

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| xj | b | CAL. | 1 |
| | c | vj | 2 |
| xix | d | v | 3 |
| viiij | e | iiij | 4 |
| | f | iiij | 5 |
| xvj | g | Prid. | 6 |
| v | A | NON. | 7 |
| | b | viiij | 8 |
| xiiij | c | vij | 9 |
| ij | d | vj | 10 |
| | e | v | 11 |
| x | f | iiij | 12 |
| | g | iiij | 13 |
| xviiij | A | Prid. | 14 |
| vij | b | IDIB. | 15 |
| | c | xvij | 16 |
| xv | d | xvj | 17 |
| iiij | e | xv | 18 |
| | f | xiiij | 19 |
| xij | g | xiiij | 20 |
| j | A | xij | 21 |
| | b | xj | 22 |
| ix | c | x | 23 |
| | d | ix | 24 |
| xvij | e | viiij | 25 |

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| vj | f | vij | 26 |
| | g | vj | 27 |
| xiiij | A | v | 28 |
| iiij | b | iiij | 29 |
| | c | iiij | 30 |
| xj | d | Prid. | 31 |

IVNIVS (June)

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| | e | CAL. | 1 |
| xix | f | iiij | 2 |
| viiij | g | iiij | 3 |
| xvj | A | Prid. | 4 |
| v | b | NON. | 5 |
| | c | viiij | 6 |
| xiiij | d | vij | 7 |
| ij | e | vj | 8 |
| | f | v | 9 |
| x | g | iiij | 10 |
| | A | iiij | 11 |
| xviiij | b | Prid. | 12 |
| vij | c | IDIB. | 13 |
| | d | xviiij | 14 |
| xv | e | xvij | 15 |
| iiij | f | xvj | 16 |
| | g | xv | 17 |
| xij | A | xiiiij | 18 |
| j | b | xiiij | 19 |
| | c | xij | 20 |
| ix | d | xj | 21 |
| | e | x | 22 |

| Aurei num. | Lit. Dñic. | Dies (Roman) | Dies mensis |
|------------|------------|--------------|-------------|
| xvij | f | ix | 23 |
| vj | g | viiij | 24 |
| | A | vij | 25 |
| xiiiij | b | vj | 26 |
| iiij | c | v | 27 |
| | d | iiiij | 28 |
| xj | e | iiij | 29 |
| | f | Prid. | 30 |

(Continuation of the ecclesiastical golden-number month-tables — the second half of the year, July through December — followed by the prose note on how the golden numbers are laid out, and then the opening of a second calendar table (January–March) showing what the reformed calendar would look like if golden numbers were entered in place of epacts.)

[Printed p. 46 — July, August, September]

Each month-panel has four columns: **Aurei num.** (golden number), **Literæ Dñic.** (Dominical / Sunday letter), the (unlabelled) **Roman day-reckoning**, and **Dies mensis** (day of the month). A blank golden-number cell means no golden number falls on that day.

IVLIVS (July)

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| xix | g | CAL. | 1 |
| viiij | A | vi | 2 |
| | b | v | 3 |
| xvj | c | iiiij | 4 |
| v | d | iiij | 5 |
| | e | Prid. | 6 |
| xiiij | f | NON. | 7 |
| ij | g | viiij | 8 |
| | A | vij | 9 |
| x | b | vi | 10 |
| | c | v | 11 |

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | d | iiiij | 12 |
| xviiij | e | iiij | 13 |
| vij | f | Prid. | 14 |
| | g | IDIB. | 15 |
| xv | A | xvij | 16 |
| iiiij | b | xvi | 17 |
| | c | xv | 18 |
| xij | d | xiiiij | 19 |
| j | e | xiiij | 20 |
| | f | xij | 21 |
| ix | g | xi | 22 |
| | A | x | 23 |
| | b | ix | 24 |
| xvij | c | viiij | 25 |
| vj | d | vij | 26 |
| | e | vi | 27 |
| xiiiij | f | v | 28 |
| iiij | g | iiiij | 29 |
| xj | A | iiij | 30 |
| xix | b | Prid. | 31 |

AVGVSTVS (August)

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| viiij | c | CAL. | 1 |
| xvj | d | iiiij | 2 |
| v | e | iiij | 3 |
| | f | Prid. | 4 |
| xiiij | g | NON. | 5 |
| ij | A | viiij | 6 |
| | b | vij | 7 |
| x | c | vi | 8 |

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | d | v | 9 |
| xviiij | e | iiiiij | 10 |
| vij | f | iiij | 11 |
| | g | Prid. | 12 |
| xv | A | IDIB. | 13 |
| iiiiij | b | xix | 14 |
| | c | xviii | 15 |
| xij | d | xvij | 16 |
| j | e | xvi | 17 |
| | f | xv | 18 |
| ix | g | xiiiiij | 19 |
| | A | xiiij | 20 |
| | b | xij | 21 |
| xvij | c | xi | 22 |
| vj | d | x | 23 |
| | e | ix | 24 |
| xiiiij | f | viiij | 25 |
| iiij | g | vij | 26 |
| | A | vi | 27 |
| xj | b | v | 28 |
| xix | c | iiiiij | 29 |
| | d | iiij | 30 |
| viiij | e | Prid. | 31 |

SEPTEMPFR (September) [header printed thus, for *September*]

| Aurei num. | Literæ Doñic. | Roman reckoning | Dies mensis |
|------------|---------------|-----------------|-------------|
| xvj | f | CAL. | 1 |
| v | g | iiii | 2 |
| | A | iii | 3 |
| xiiij | b | Prid. | 4 |
| ij | c | NON. | 5 |

| Aurei num. | Literæ Doñic. | Roman reckoning | Dies mensis |
|------------|---------------|-----------------|-------------|
| | d | viii | 6 |
| x | e | vii | 7 |
| | f | vi | 8 |
| xviiij | g | v | 9 |
| vij | A | iiii | 10 |
| | b | iii | 11 |
| xv | c | Prid. | 12 |
| iiij | d | IDIB. | 13 |
| | e | xviii | 14 |
| xij | f | xvii | 15 |
| j | g | xvi | 16 |
| | A | xv | 17 |
| ix | b | xiiii | 18 |
| | c | xiii | 19 |
| xvij | d | xii | 20 |
| vj | e | xi | 21 |
| | f | x | 22 |
| xiiij | g | ix | 23 |
| iiij | A | viii | 24 |
| | b | vii | 25 |
| xj | c | vi | 26 |
| | d | v | 27 |
| xix | e | iiii | 28 |
| viiij | f | iii | 29 |
| | g | Prid. | 30 |

[Printed p. 47 — October, November, December, prose note, and the heading of the following calendar]

OCTOBER

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| xvj | A | CAL. | 1 |

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| v | b | vi | 2 |
| xiiij | c | v | 3 |
| ij | d | iiii | 4 |
| | e | iii | 5 |
| x | f | Prid. | 6 |
| | g | NON. | 7 |
| xviiij | A | viii | 8 |
| vij | b | vii | 9 |
| | c | vi | 10 |
| xv | d | v | 11 |
| iiij | e | iiii | 12 |
| | f | iii | 13 |
| xij | g | Prid. | 14 |
| j | A | IDIB. | 15 |
| | b | xvii | 16 |
| ix | c | xvi | 17 |
| | d | xv | 18 |
| xvij | e | xiiii | 19 |
| vj | f | xiii | 20 |
| | g | xii | 21 |
| xiiiij | A | xi | 22 |
| ijj | b | x | 23 |
| | c | ix | 24 |
| xj | d | viii | 25 |
| xix | e | vii | 26 |
| | f | vi | 27 |
| viiij | g | v | 28 |
| | A | iiii | 29 |
| xvi | b | iii | 30 |
| v | c | Prid. | 31 |

[Numerical note: October's doubled golden numbers are printed with distinct terminal sorts — value 16 as **xvj** (j-terminal) on day 1 but **xvi** (i-terminal) on day 30; value 5 as **v** on both day 2 and day 31. Transcribed as printed.]

NOVEMBER [printed N◊VEMBER, with an ornamented initial O]

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | d | CAL. | 1 |
| xiiij | e | iiii | 2 |
| ij | f | iii | 3 |
| | g | Prid. | 4 |
| x | A | NON. | 5 |
| | b | viii | 6 |
| xviiij | c | vii | 7 |
| vij | d | vi | 8 |
| | e | v | 9 |
| xv | f | iiii | 10 |
| iiij | g | iii | 11 |
| | A | Prid. | 12 |
| xij | b | IDIB. | 13 |
| j | c | xviii | 14 |
| | d | xvii | 15 |
| ix | e | xvi | 16 |
| | f | xv | 17 |
| xvij | g | xiiii | 18 |
| vj | A | xiii | 19 |
| | b | xii | 20 |
| xiiiij | c | xi | 21 |
| iiij | d | x | 22 |
| | e | ix | 23 |
| xj | f | viii | 24 |
| xix | g | vii | 25 |
| | A | vi | 26 |
| viiij | b | v | 27 |

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | c | iiii | 28 |
| xvj | d | iii | 29 |
| v | e | Prid. | 30 |

DECEMBER

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| xiiij | f | CAL. | 1 |
| ij | g | iiii | 2 |
| | A | iii | 3 |
| x | b | Prid. | 4 |
| | c | NON. | 5 |
| xviiij | d | viii | 6 |
| vij | e | vii | 7 |
| | f | vi | 8 |
| xv | g | v | 9 |
| iiij | A | iiii | 10 |
| | b | iii | 11 |
| xii | c | Prid. | 12 |
| i | d | IDIB. | 13 |
| | e | xix | 14 |
| ix | f | xviii | 15 |
| | g | xvii | 16 |
| xviij | A | xvi | 17 |
| vj | b | xv | 18 |
| | c | xiiii | 19 |
| xiiiij | d | xiii | 20 |
| iiij | e | xii | 21 |
| xj | f | xi | 22 |
| | g | x | 23 |
| xix | A | ix | 24 |
| | b | viii | 25 |

| Aurei num. | Literæ Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| viiĵ | c | vii | 26 |
| | d | vi | 27 |
| xvj | e | v | 28 |
| v | f | iiii | 29 |
| | g | iii | 30 |
| xiii | A | Prid. | 31 |

[Numerical note: in December the golden numbers on days 12, 13 and 31 are set with i-terminal sorts — **xii** (12), **i** (golden number 1), and **xiii** (13) — whereas the norm elsewhere is j-terminal. Value 13 is doubled, printed **xiiĵ** (j-terminal) on day 1 and **xiii** (i-terminal) on day 31. Transcribed as printed.]

Prose note following the December table

In this calendar you can see plainly that each golden number is set down twelve times — as many times, that is, as there are lunations in a common lunar year — with the exception of the seven numbers which, after the 20th [?] of December, are repeated in a thirteenth position, and which of course also occupy the earlier days of January. I want you to be aware of this, so that you do not suppose the golden numbers to be arranged in the calendar after the fashion of a cycle, that is, as though the golden number of the first day of January were formed from the last golden number of the year by adding 8, like the rest. For this way of generating the successive golden numbers by adding 8 to the preceding ones ceases entirely at the end of the year, and begins afresh at the start of the year from the very same golden number with which it began before, without any regard to the golden number that stands last in December. Exactly the same thing is seen in the calendar that follows, where the golden numbers are so arranged that they indicate the new moons from the restored year up to the year 1700 — no otherwise than the way the same new moons are shown by the epacts in the new calendar.

SEQVITVR.

CALENDARIVM ECCLESIASTICVM QVO post anni
Correctionem à Gregorio XIII. factam Ecclesia vti deberet
vsque ad annum 1700. si aurei numeri pro Epactis in eo
descripti essent.

[The Ecclesiastical Calendar which, after the correction of the year made by
Gregory XIII [Gregory XIII], the Church would have had to use up to the year
1700, if golden numbers had been entered in it in place of epacts.]

[Printed p. 48 — the following calendar begins: January,
February, March]

In this second table the month-names are set in mixed case (Ianuarius,
Februarius, Martius) and the Dominical-letter column is headed **Litere Dñic.**
(with an e-caudata). The four columns are the same as before: golden number,
Dominical letter, Roman day-reckoning, day of the month.

Ianuarius (January)

| Aurei num. | Litere Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | A | CAL. | 1 |
| ix | b | iiii | 2 |
| | c | iii | 3 |
| xvij | d | Prid. | 4 |
| vj | e | NON. | 5 |
| | f | viii | 6 |
| xiiij | g | vii | 7 |
| ijj | A | vi | 8 |
| | b | v | 9 |
| xj | c | iiii | 10 |
| | d | iii | 11 |
| xix | e | Prid. | 12 |
| vijj | f | IDIB. | 13 |
| | g | xix | 14 |

| Aurei num. | Litere Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| xvj | A | xviii | 15 |
| v | b | xvii | 16 |
| | c | xvi | 17 |
| xiiij | d | xv | 18 |
| ij | e | xiiii | 19 |
| | f | xiii | 20 |
| x | g | xii | 21 |
| | A | xi | 22 |
| xviiij | b | x | 23 |
| vij | c | ix | 24 |
| | d | viii | 25 |
| xv | e | vii | 26 |
| iiiij | f | vi | 27 |
| | g | v | 28 |
| xij | A | iiii | 29 |
| j | b | iii | 30 |
| | c | Prid. | 31 |

Februarius (February)

| Aurei num. | Litere Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| ix | d | CAL. | 1 |
| | e | iiii | 2 |
| xvij | f | iii | 3 |
| vj | g | Prid. | 4 |
| xiiiij | A | NON. | 5 |
| iiij | b | viii | 6 |
| | c | vii | 7 |
| xj | d | vi | 8 |
| | e | v | 9 |
| xix | f | iiii | 10 |
| viiij | g | iii | 11 |

| Aurei num. | Litere Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | A | Prid. | 12 |
| xvj | b | IDIB. | 13 |
| v | c | xvi | 14 |
| | d | xv | 15 |
| xiiij | e | xiiii | 16 |
| ij | f | xiii | 17 |
| | g | xii | 18 |
| x | A | xi | 19 |
| | b | x | 20 |
| xviiij | c | ix | 21 |
| vij | d | viii | 22 |
| | e | vii | 23 |
| xv | f | vi | 24 |
| iiij | g | v | 25 |
| | A | iiii | 26 |
| xij | b | iii | 27 |
| j | c | Prid. | 28 |

Martius (March)

| Aurei num. | Litere Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| | d | CAL. | 1 |
| ix | e | vi | 2 |
| | f | v | 3 |
| xvij | g | iiii | 4 |
| vj | A | iii | 5 |
| | b | Prid. | 6 |
| xiiij | c | NON. | 7 |
| iiij | d | viii | 8 |
| | e | vii | 9 |
| xj | f | vi | 10 |
| | g | v | 11 |

| Aurei num. | Literę Dñic. | Roman reckoning | Dies mensis |
|------------|--------------|-----------------|-------------|
| xix | A | iiii | 12 |
| viiij | b | iii | 13 |
| | c | Prid. | 14 |
| xvj | d | IDIB. | 15 |
| v | e | xvii | 16 |
| | f | xvi | 17 |
| xiiij | g | xv | 18 |
| ij | A | xiiii | 19 |
| | b | xiii | 20 |
| x | c | xii | 21 |
| | d | xi | 22 |
| xviiij | e | x | 23 |
| vij | f | ix | 24 |
| | g | viii | 25 |
| xv | A | vii | 26 |
| iiij | b | vi | 27 |
| | c | v | 28 |
| xij | d | iiii | 29 |
| i | e | iii | 30 |
| | f | Prid. | 31 |

Apologia adversus Maestlinum, Liber Secundus, Caput II (continued)

The Second Calendar — golden numbers set in place of epacts (valid to 1700), continued

These three leaves carry only the perpetual month-tables of the second calendar. Each month is set as four columns: the golden number (**Aurei num.** = *Aurei numeri*), the Dominical letter (**Literę Dñic.** = *Literę Dominicales*), the Roman-calendar reckoning of the day (unlabelled), and the day of the month (**Dies**

mensis). The tables continue directly from March on the preceding leaf and run April through December.

Typographic conventions preserved as printed: the golden-number column uses the j-terminal computistical sorts (j, ij, iij, iiij, vj, vij, viij, xj, xij, xiij, xiiij, xvj, xvij, xvij, xix); the Roman-reckoning column uses i-terminal forms (iii, iiij, vii, viii, xi, xii, xiii, xiiii, xvi, xvii, xviii, xix). Blank golden-number cells are left empty, as in the source.

Page 49 — Aprilis · Maius · Iunius

Aprilis

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| ix | g | CAL. | 1 |
| | A | iiii | 2 |
| xvij | b | iii | 3 |
| vi | c | Prid. | 4 |
| xiiij | d | NON. | 5 |
| ij | e | viii | 6 |
| | f | vii | 7 |
| xj | g | vi | 8 |
| | A | v | 9 |
| xix | b | iiii | 10 |
| vij | c | iii | 11 |
| | d | Prid. | 12 |
| xvj | e | IDIB. | 13 |
| v | f | xviii | 14 |
| | g | xvii | 15 |
| xiiij | A | xvi | 16 |
| ij | b | xv | 17 |
| | c | xiiii | 18 |
| x | d | xiii | 19 |
| | e | xii | 20 |
| xviiij | f | xi | 21 |
| vij | g | x | 22 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | A | ix | 23 |
| xv | b | viii | 24 |
| iiij | c | vii | 25 |
| | d | vi | 26 |
| xij | e | v | 27 |
| j | f | iiii | 28 |
| | g | iii | 29 |
| ix | A | Prid. | 30 |

Maius

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | b | CAL. | 1 |
| xvij | c | vi | 2 |
| vj | d | v | 3 |
| | e | iiii | 4 |
| xiiij | f | iii | 5 |
| iiij | g | Prid. | 6 |
| | A | NON. | 7 |
| xj | b | viii | 8 |
| | c | vii | 9 |
| xix | d | vi | 10 |
| viiij | e | v | 11 |
| | f | iiii | 12 |
| xvj | g | iii | 13 |
| v | A | Prid. | 14 |
| | b | IDIB. | 15 |
| xiiij | c | xvii | 16 |
| iiij | d | xvi | 17 |
| | e | xv | 18 |
| x | f | xiiii | 19 |
| | g | xiii | 20 |
| xviiij | A | xii | 21 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| vij | b | xi | 22 |
| | c | x | 23 |
| xv | d | ix | 24 |
| iiij | e | viii | 25 |
| | f | vii | 26 |
| xij | g | vi | 27 |
| j | A | v | 28 |
| | b | iiii | 29 |
| ix | c | iii | 30 |
| | d | Prid. | 31 |

Iunius

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| xvij | e | CAL. | 1 |
| vj | f | iiii | 2 |
| xiiij | g | iii | 3 |
| iiij | A | Prid. | 4 |
| | b | NON. | 5 |
| xj | c | viii | 6 |
| | d | vii | 7 |
| xix | e | vi | 8 |
| viiij | f | v | 9 |
| | g | iiii | 10 |
| xvj | A | iii | 11 |
| v | b | Prid. | 12 |
| | c | IDIB. | 13 |
| xiiij | d | xviii | 14 |
| ij | e | xvii | 15 |
| | f | xvi | 16 |
| x | g | xv | 17 |
| | A | xiiii | 18 |
| xviiij | b | xiii | 19 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| vij | c | xii | 20 |
| | d | xi | 21 |
| xv | e | x | 22 |
| iiij | f | ix | 23 |
| | g | viii | 24 |
| xij | A | vii | 25 |
| j | b | vi | 26 |
| | c | v | 27 |
| ix | d | iiii | 28 |
| | e | iii | 29 |
| xvij | f | Prid. | 30 |

Page 50 — Iulius · Augustus · September

Iulius

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| vi | g | CAL. | 1 |
| | A | vi | 2 |
| xiiij | b | v | 3 |
| ij | c | iiii | 4 |
| | d | iii | 5 |
| xj | e | Prid. | 6 |
| | f | NON. | 7 |
| xix | g | viii | 8 |
| viiij | A | vii | 9 |
| | b | vi | 10 |
| xvj | c | v | 11 |
| v | d | iiii | 12 |
| | e | iii | 13 |
| xiiij | f | Prid. | 14 |
| ij | g | IDIB. | 15 |
| | A | xvii | 16 |
| x | b | xvi | 17 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | c | xv | 18 |
| xviiij | d | xiiii | 19 |
| vij | e | xiii | 20 |
| | f | xii | 21 |
| xv | g | xi | 22 |
| iiij | A | x | 23 |
| | b | ix | 24 |
| xij | c | viii | 25 |
| j | d | vii | 26 |
| | e | vi | 27 |
| ix | f | v | 28 |
| | g | iiii | 29 |
| xvij | A | iii | 30 |
| vi | b | Prid. | 31 |

Augustus

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| xiiij | c | CAL. | 1 |
| iiij | d | iiii | 2 |
| | e | iii | 3 |
| xj | f | Prid. | 4 |
| | g | NON. | 5 |
| xix | A | viii | 6 |
| viiij | b | vii | 7 |
| | c | vi | 8 |
| xvj | d | v | 9 |
| v | e | iiii | 10 |
| | f | iii | 11 |
| xiiij | g | Prid. | 12 |
| ij | A | IDIB. | 13 |
| | b | xix | 14 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| x | c | xviii | 15 |
| | d | xvii | 16 |
| xviiij | e | xvi | 17 |
| vij | f | xv | 18 |
| | g | xiiii | 19 |
| xv | A | xiii | 20 |
| iiij | b | xii | 21 |
| | c | xi | 22 |
| xij | d | x | 23 |
| j | e | ix | 24 |
| | f | viii | 25 |
| ix | g | vii | 26 |
| | A | vi | 27 |
| xvij | b | v | 28 |
| vj | c | iiii | 29 |
| | d | iii | 30 |
| xiiij | e | Prid. | 31 |

September

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| iiij | f | CAL. | 1 |
| | g | iiii | 2 |
| xj | A | iii | 3 |
| | b | Prid. | 4 |
| xix | c | NON. | 5 |
| viiij | d | viii | 6 |
| | e | vii | 7 |
| xvj | f | vi | 8 |
| v | g | v | 9 |
| | A | iiii | 10 |
| xiiij | b | iii | 11 |
| ij | c | Prid. | 12 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | d | IDIB. | 13 |
| x | e | xviii | 14 |
| | f | xvii | 15 |
| xviiij | g | xvi | 16 |
| vij | A | xv | 17 |
| | b | xiiii | 18 |
| xv | c | xiii | 19 |
| iiij | d | xii | 20 |
| | e | xi | 21 |
| xij | f | x | 22 |
| j | g | ix | 23 |
| | A | viii | 24 |
| ix | b | vii | 25 |
| | c | vi | 26 |
| xvij | d | v | 27 |
| vj | e | iiii | 28 |
| xiiij | f | iii | 29 |
| iiij | g | Prid. | 30 |

Page 53 — October · Nouember · December

October

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | A | CAL. | 1 |
| xj | b | vi | 2 |
| | c | v | 3 |
| xix | d | iiii | 4 |
| viiij | e | iii | 5 |
| | f | Prid. | 6 |
| xvj | g | NON. | 7 |
| v | A | viii | 8 |
| | b | vii | 9 |
| xiiij | c | vi | 10 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| ij | d | v | 11 |
| | e | iiii | 12 |
| x | f | iii | 13 |
| | g | Prid. | 14 |
| xviiij | A | IDIB. | 15 |
| vij | b | xvii | 16 |
| | c | xvi | 17 |
| xv | d | xv | 18 |
| iiij | e | xiiii | 19 |
| | f | xiii | 20 |
| xij | g | xii | 21 |
| j | A | xi | 22 |
| | b | x | 23 |
| ix | c | ix | 24 |
| | d | viii | 25 |
| xvij | e | vii | 26 |
| vi | f | vi | 27 |
| | g | v | 28 |
| xiiiij | A | iiii | 29 |
| iiij | b | iii | 30 |
| | c | Prid. | 31 |

Nouember

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| xj | d | CAL. | 1 |
| | e | iiii | 2 |
| xix | f | iii | 3 |
| viiij | g | Prid. | 4 |
| | A | NON. | 5 |
| xvj | b | viii | 6 |
| v | c | vii | 7 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | d | vi | 8 |
| xiiij | e | v | 9 |
| ij | f | iiii | 10 |
| | g | iii | 11 |
| x | A | Prid. | 12 |
| | b | IDIB. | 13 |
| xviiij | c | xviii | 14 |
| vij | d | xvii | 15 |
| | e | xvi | 16 |
| xv | f | xv | 17 |
| iiij | g | xiiii | 18 |
| | A | xiii | 19 |
| xij | b | xii | 20 |
| j | c | xi | 21 |
| | d | x | 22 |
| ix | e | ix | 23 |
| | f | viii | 24 |
| xvij | g | vii | 25 |
| vj | A | vi | 26 |
| xiiiij | b | v | 27 |
| iiij | c | iiii | 28 |
| | d | iii | 29 |
| xj | e | Prid. | 30 |

December

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | f | CAL. | 1 |
| xix | g | iiii | 2 |
| viiij | A | iii | 3 |
| | b | Prid. | 4 |
| xvj | c | NON. | 5 |
| v | d | viii | 6 |

| Aurei num. | Literæ Dñic. | (Roman reckoning) | Dies mensis |
|------------|--------------|-------------------|-------------|
| | e | vii | 7 |
| xiiij | f | vi | 8 |
| ij | g | v | 9 |
| | A | iiii | 10 |
| x | b | iii | 11 |
| | c | Prid. | 12 |
| xviiij | d | IDIB. | 13 |
| vij | e | xix | 14 |
| | f | xviii | 15 |
| xv | g | xvii | 16 |
| iiij | A | xvi | 17 |
| | b | xv | 18 |
| xij | c | xiiii | 19 |
| j | d | xiii | 20 |
| | e | xii | 21 |
| ix | f | xi | 22 |
| | g | x | 23 |
| xviij | A | ix | 24 |
| vj | b | viii | 25 |
| | c | vii | 26 |
| xiiiij | d | vi | 27 |
| ijj | e | v | 28 |
| | f | iiii | 29 |
| xj | g | iii | 30 |
| xix | A | Prid. | 31 |

[Margin: Why the following golden number is formed from the preceding one by adding 8 or subtracting 11, while the preceding is formed from the following by adding 11 or subtracting 8; and why the golden numbers are not written in the calendar in an unbroken sequence.]

The reason why the following golden number is formed from the preceding one by adding 8 or subtracting 11, and again the preceding from the following by

adding 11 or subtracting 8; and why the golden numbers are not written in the calendar in continuous order, but for the most part single days are left empty between each pair — is this. Eight solar years, allotting to each 365 days and 6 hours, comprise 2922 days, in which fall very nearly 99 lunations; from the last lunation alone there is wanting 1 day, 12 hours, 41 minutes, 15 seconds, 9 thirds. For 99 lunations, according to the mean course of the Moon, require 2923 days, 12 hours, 41 minutes, 15 seconds, 9 thirds. Therefore the lunations after 8 elapsed years do not begin on the same days on which the new moons occurred 8 years before, but nearly a day and a half later. For this reason, after any golden number there is written in the calendar a golden number greater than it by eight units, to signify that after eight years the new moons fall not on the days to which the preceding golden number was assigned, but on those to which the following golden number — formed from the preceding by adding 8 — is prefixed. And since, if the following golden number were to come immediately after the preceding one, the lunation of the following golden number would be brought forward by 12 hours, the next golden number must be written down, but with one empty day left between, lest its lunation be anticipated by a whole day. Thus this golden number, the third from the first (from which it is formed by adding 16), is written in the third place after it, just as its lunation likewise begins three days later than that of the first. This is the reason why the following golden number is composed by adding 8 to the preceding one, and why they are set down two together, with single days left empty between each pair — except for a few golden numbers which interrupt this order on account of the equation of the Moon that is required.

[Margin: How, from the golden numbers arranged in the calendar, the new moons are to be investigated.]

Now although the greater golden number could equally well have been placed next below the smaller — rather than the smaller next below the greater — this seems due to some chance circumstance rather than to any fixed reason that would compel the smaller to be written next below the greater rather than the greater next below the smaller, since by either arrangement the reckoning of the lunations would hold good. And let this be said concerning the reason why the golden numbers do not preserve a continuous order.

Let us now also explain the reason why the preceding golden number is formed from the following by adding 11 or subtracting 8, and why the golden numbers do not preserve a continuous order. Eleven solar years contain 4017 days and 18 hours, in which are completed 136 lunations, with 1 day left over — 1 day, 14

hours, 8 minutes, 47 seconds, 4 thirds. For 136 lunations require 4016 days, 3 hours, 51 minutes, 12 seconds, 56 thirds. Therefore the new moons after 11 elapsed years do not fall on the same days on which they occurred 11 years before, but begin earlier, namely by that day and by nearly a half. Since therefore any golden number is greater by eleven units than that which precedes it in the same calendar by 11 years, and since it is plain that the following golden number can be formed from the preceding, and the preceding from the following, either by adding 8 or 11 or by subtracting 11 or 8 — hence it came about that the ancient writers distinguished the nineteen-year cycle, which they called the ἐννεαδεκαετηρίδα [Greek: enneadekaeterida, "the nineteen-year period"], into an ὀγδόαδα [Greek: ogdoada, "ogdoad," a group of eight] and an ἐνδέκαδα [Greek: hendekada, "hendekad," a group of eleven]; since indeed its whole progression and its order in the calendar is constituted from the addition or subtraction of 8 or 11, as we have explained. And the ὀγδοάς [Greek: ogdoas, "the ogdoad"] indeed, with the 11 days by which the solar year exceeds the lunar, makes up the whole nineteen-year cycle; while the ἐνδεκάς [Greek: hendekas, "the hendekad"], together with the nineteen-year cycle, completes a full lunation of 30 days.

[Margin: The inadequacy of the golden number for investigating the new moons.]

Once the 19 golden numbers had been arranged in the calendar in the manner we have described, it was not difficult to find the time of the new moon of any month. For on that day the Moon was declared to be new — that is, the new moon — to which the golden number running in the year proposed was prefixed; and from this new moon Easter, together with the other movable feasts, was investigated.

[Margin: By how much the new moons had run ahead of their times from the age of the Council of Nicaea down to the year of the correction.]

And yet all these things which we have handed down concerning the arrangement and use of the golden number, though devised by the ancients with great ingenuity, the observation of astronomers finds not in every respect true. For the new moons, after 19 years have passed, do not return to precisely the same seats; but they run ahead a little before the 19 completed years, so that in any given span of 19 years they anticipate their places by 1 hour, 27 minutes, 31 seconds, 55 thirds; over the span of four nineteen-year cycles — that is, 76 years — by 5 hours, 50 minutes, 7 seconds, 40 thirds; and at last, in 312½ years, by nearly a whole day. As was shown in the preceding chapter, and thus indeed from the times of the Council of Nicaea down to our own age they have advanced by four days and more.

[Margin: In what way the golden numbers ought to have been moved forward in the old calendar so that they might indicate the new moons, both before the correction and after.]

From this it came about that, in order to find the new moons by the golden numbers of the Council of Nicaea (that is, supposing the golden number 3 to stand at the beginning of January), before the correction of the calendar one had to ascend from the place of the golden number proposed for the current year up to the fifth day inclusive — a thing which some were accustomed to do by these five syllables, IN COELIS EST HIC, or by these, HIC NOVA LVNA, or by these, IN COELO LVNA. And therefore, in order that the golden numbers before the correction might rightly indicate the new moons, they would all have had to be moved forward by five days, three empty days being left between the old and the new places, so that the golden number 19, which before the correction occupied the fifth day of January, would have to be assigned to the first day — the same rule being nevertheless preserved, that the lunations be constituted alternately of 30 and 29 days, as was done, before the emendation of the calendar, in the Breviaries and Missals corrected by Pius V [Pope Pius V]. And in this manner indeed the golden numbers, once arranged,

would have rightly indicated the new moons for those years which most nearly preceded the restitution of the year. But once the golden numbers had by this means been advanced toward the beginnings of the months, if they had had to be retained in the calendar after the correction — that is, after the removal of 10 days — they would have had to be moved back again toward the ends of the months by ten days, so that 9 days would lie between the golden numbers advanced before the correction of the year and those same numbers set back after the correction, the same alternating lunations of 30 and 29 days being preserved. For in this way, after the restitution of the year, the golden numbers would rightly show the new moons according to the mean course of the Moon.

But for all that, the golden numbers thus corrected and restored to their proper places, although for some while they would indicate the new moons rightly, could not do so perpetually, or for a long time. For whenever the intercalary day is taken away from some hundredth year — that is, whenever some hundredth year is made a common year, lest the equinox recede from March 21, as was said above — all the new moons would fall one day later than they would be indicated by the golden numbers. Therefore, as often as a hundredth year, which by its own nature is bissextile, is made a common year, so often would all the golden numbers have to be moved down by one day, that they might rightly show the

new moons. Again, since (as we showed in the preceding chapter) the new moons anticipate their seats in the calendar by one day in $312\frac{1}{2}$ years, it follows that after any $312\frac{1}{2}$ years the golden numbers would have to be moved toward the beginnings of the months by one day, that they might indicate the new moons — provided, however, that the intercalary day were not then to be omitted. And in this way 30 calendars would have to be made, so that the arrangement of the golden number would have 30 variations, each being moved up and down through 30 days — as many, that is, as are contained in one lunation of 30 days — as will be evident from what follows.

[Margin: That the golden numbers, once corrected in the calendar, cannot indicate the new moons perpetually or for a long time; and why. — That if the golden number had to be retained in the calendar, 30 calendars would have to be made. — That the 30 epacts were rightly substituted in place of the golden numbers.]

But because this would be exceedingly inconvenient and troublesome, it was by the best of counsel arranged that, the golden numbers being removed from the calendar, other numbers should succeed in their place, which in a single calendar might perpetually show the new moons — whether they advance toward the beginnings of the months or roll back toward the ends — with no change made in the calendar, as we shall say in the next chapter.

[Margin: Why every epact must be less than 30. — What the epacts are, and why they are 30.]

Now these numbers are 30: the epacts, from 1 up to xxx, or to *. For the last epact, 30, is marked by this sign *, rather than by the number xxx, because, if we wish to speak properly, no epact can be xxx, since every epact must be less than the time of a whole lunation. For the epact is nothing other than the number of days which, in the month of December, remain over after the last lunation of the year. Thus, if the last lunation ends on the very last day of December, so that no day remains over, the epact of the following year will be 0; if it closes on the second-to-last day, the epact will be 1, on account of the one day that remains; if it ends on the day before that — that is, on the 29th — the epact will be ij; and so on with the rest, until we come to a lunation that has its end on the Calends of December [December 1], so that 30 days remain over. For then that lunation is not the last but the second-to-last, since those 30 superfluous days constitute the last lunation, and consequently the epact will then be 0, or xxx, which we denote by the sign *. And this is the reason why there can be 30 epacts in all, from 1 up to xxx, or 0, or *, on account of the 1, 2, 3, and so on up to 30, or 0, days which can

remain over after a lunation ending in the month of December. And although, when some lunation ends on the first day of December, or on the last, the epact of the following year will be xxx, or 0, that epact xxx or 0 must nevertheless be marked with some sign, namely this *, so that by it the new moons of the following year may be investigated, and it may be understood that in December two lunations were then ended — one on the last day, so that no day remained over, the other on the first day, so that after it 30 days remained. But it happens sometimes that the epact of some year is greater by one unit than the number of days which remain over after the last lunation of the preceding year; and when this occurs will be told when we treat of the finding of the epact of each year.

This same number, 30, of the epacts, is gathered from the 11 days by which we said the lunar year is exceeded by the solar. For if in the first year 11 days remain over, there will remain 22 in the second, and 33 in the third; and, casting out the 30 that make up one lunation, the remainder will yield epact iij; and so on in turn, always adding 11 and casting out 30 whenever the sum is greater than 30. Thus all 30 epacts will be composed, so that the first is xj and the last xxx, or 0, or *, after which epact xj is again produced, as here appears:

xj. xxij. iij. xiiij. xxv. vj. xvij. xxviiij. ix. xx. j. xij. xxiiij. iiij. xv. xxvj. vij. xviiij. xxix. x. xxj. ij. xiiij. v. xvj. xxvij. viij. xix. xxx. — or 0, or *.

It happens now and then that 12, not 11, must be added to the preceding epact for the following epact to be formed; and when this happens will be told below, when we treat of the finding of the epact of each year.

[Margin: Why the epacts are so called.]

These 30 numbers are called Epacts, by a Greek word which in Latin means the same as "added," "adventitious," "inserted," or "interposed" days. For they are attached at the end of the last lunar month to fill out the number of days of the solar year, and to begin the first lunation of the following year. But in what way epacts of this kind, placed in the calendar, can perpetually indicate the new moons with no change made in the calendar, will be made plain from what follows; and first let us set forth by what art and skill they are to be arranged through the days of the calendar.

[Margin: Why the epacts are arranged in the calendar in retrograde order.]

BY WHAT DEVICE THE EPACTS ARE DESCRIBED IN THE CALENDAR.

CHAPTER III.

Although the epacts could be described in the calendar according to the natural series of the numbers, from 1 up to xxx or to *, it has nevertheless seemed more expedient that they be described in retrograde order, proceeding from xxx or * through xxix, xxviii, xxvii, and so on, down to 1 — so that they may be distinguished from the day-number of the same calendar, and so that they may indicate the new moons more naturally, as will be manifest from what follows. Beginning, then, from epact * at the start of January, epact xxix is written at the second day; xxviii

[Margin: In what way the epacts are to be arranged in the calendar.]

at the third, and so on in turn, in retrograde order, until 1 is reached, which epact is prefixed to January 30; after which all thirty epacts are repeated in the same order down to the end of the calendar. So that all of them are inscribed in the calendar only twelve times, except these eleven — *, xxix, xxviii, xxvii, xxvi, xxv, xxiiii, xxiii, xxii, xxi, xx — which are repeated a thirteenth time in the last eleven days of December. There is also an exception in epact 19, marked with a different character or colour; for this too is appended to the last day, next to epact xx, as we shall say below.

[Note on the load-bearing forms: the doubled epact of the nineteen-year cycle is set here in Arabic figures — "19" — and, throughout the argument below, "25", distinct from the Roman-numeral epacts "xxv", "xxiiij", "xxvj". This Roman-versus-Arabic contrast is the substance of the passage and is preserved as printed.]

In order that the epacts may rightly indicate the new moons, this caution must be used in describing them. In the second placing of the thirty epacts, and likewise in the fourth, sixth, eighth, tenth, and twelfth of the same — namely on February 5, April 5, June 3, August 1, September 29, and November 27 (the days on which epact xxv falls by the arrangement given above) — these two epacts, xxv and xxiiij, are to be inscribed together. From this it comes about that, after the twelfth inscription of the epacts, 11 days remain over in December, to which again these epacts are prefixed — *, xxix, xxviii, xxvii, xxvi, xxv, xxiiii, xxiii, xxii, xxi, xx — which, namely, were assigned to the first eleven days of January. All 30 epacts, inscribed twelve times, occupy exactly 354 days — as many as we said are

contained in the common lunar year — [so that they] cannot preserve the reckoning of the cycle, in such a way that the epact of the first day of January is the one next smaller than that which is written next to the last day of December, which precedes the first day of January; but their retrograde order breaks off at the end of the year, and begins again at the start of the year from epact *, as before.

Now if these two epacts were not appended to the same day in the six places of the calendar, but each followed the other singly in retrograde order, all 12 lunations of each epact would be of 30 days, and all the epacts, repeated twelve times, would occupy 360 days — a number which exceeds the common lunar year by six days, which is absurd. Therefore, that the lunations may exist alternately of 30 and 29 days, it is necessary to place two epacts together in six places. For in this way it will come about that the lunations are constituted alternately of 30 and 29 days. For when epact xxiiij, together with the others following it, has ascended into February — for example, on account of the two epacts xxv and xxiiij [placed together] toward the beginning of the month — it comes about that the lunations beginning from the preceding epacts, as from epacts xxiiij, xxiiij, xxij and the rest of January, contain only 29 days. And the same we mean to be understood of the lunations of the epacts which in the other five places of the calendar precede [that day].

Next, since it happens now and then that in one and the same nineteen-year cycle both epact xxv and epact xxiiij are in use, as will appear below, epact 25 must be written with a different character or colour, opposite epact xxvj, in those six places in which epacts xxv and xxiiij are set together. But in the other places, where on the same day epact xxiiij is to be written, this same epact 25 must be written with yet a different character or colour. For unless this be done, it will happen [that two new moons fall on one day] through epact xxv / 25 [being written] twice in the six places [?].

This inconvenience is entirely avoided by inscribing epact xxv / 25 twice in the six places of the calendar, in different characters or colours. For whenever, in some cycle, xxv runs together with a golden number greater than 11 — such as are these later eight golden numbers, 12, 13, 14, 15, 16, 17, 18, 19 — epact xxiiij will indeed also be in use in that same cycle: but if epact 25 be then taken, marked with a different character or colour, which in those six places is set opposite epact xxvj, two golden numbers, or two new moons, will not be able to fall on the same day with epact xxiiij; for epact 25, of a different [character], falls upon separate [days] in the several months. When, however, in some nineteen-

year cycle epact xxv runs with a golden number not greater than 11 — of which kind are these first eleven golden numbers, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 — epact xxiiij will never be in use in that same cycle; and epact xxv must then be taken, which is set opposite epact xxvj. So that, although in the same nineteen-year cycle epact 25 be placed twice, marked with a different character on the same day, two new moons do not on that account fall on one and the same day; because, while epact xxv is running — that one, 25, of a different colour or character — [it runs together] with epact xxvj for the finding of the new moons, of which we shall treat a little further on.

And all this will be made clear from the expanded table of the epacts (of which we shall speak a little below), in which the capital letters N, E, B and the small letters r, n, k, e, b perennially display [the individual nineteen-year cycles]. For there, in the eight lines to which [the capital letters are affixed] — each line of that table representing the several nineteen-year cycles — you will find epact 25 marked with a different [character], under these eight greater golden numbers, 12, 13, 14, 15, 16, 17, 18, 19; but epact xxiiij under the 11 lesser ones, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 — and never epact xxvj. In the other 22 lines, however, in which epact xxv is written [in the same character as the] golden numbers, you will indeed sometimes find [epact xxv], though they never occur together at the same time; you will [also] observe epact xxvj. For which reason, if now epact xxv be taken, now epact 25 of another character or colour — the one, namely, that is placed opposite epact xxvj — account being had, of course, of the lesser or greater golden number with which it runs together, as we said a little above: it is in no way possible that within the same nineteen-year cycle two new moons should fall together upon one and the same day, even though in the six places enumerated above epacts xxv and xxiiij are set opposite the same day, and epact 25, of another colour or character, is written next to that same day together with epact xxvj.

But that epact xxiv cannot be in use when epact xxv coincides with some golden number smaller than 12 — that is, not greater than 11 — and likewise that epact xxvi is not employed when epact 25 runs together with a golden number greater than 11, is also gathered very clearly from the arrangement of the golden numbers and the epacts in the Calendar.

For, as we said above, a smaller golden number is followed in the Calendar by a larger one not immediately, but with one day left between them. Hence, if in January, for example, opposite the 6th day — where epact xxv is placed — any golden number smaller than 12 is written, with which epact xxv is supposed to

run, then the next golden number must be written at January 8th, leaving the 7th empty; so that in that nineteen-year cycle no new moon can fall on the 7th. Therefore in the same cycle epact xxiv, which is placed immediately below xxv, cannot possibly be of use; otherwise a new moon would fall on January 7th. Again, since a larger golden number is immediately followed in the Calendar by a smaller one, as was said above, it follows that if opposite that same January 6th — to which epact xxv is prefixed — any golden number greater than 11 is written, with which epact 25 is supposed to run, then the following golden number must be written at January 7th, immediately after that larger one, so that in that cycle a new moon can fall on the 7th. Consequently, in the same cycle epact xxiv, placed immediately below 25, will mark the new moon, and will therefore be of use. But since a larger golden number is preceded by a smaller one not immediately, but with one day left empty, it follows that the golden number preceding that larger one — with which epact 25 is supposed to run — must be placed at the 4th day, so that on the 5th no new moon then occurs. Therefore epact xxvi, written against the 5th day, can in no way be of use then, lest a new moon fall in that cycle on January 5th.

[Margin: Why in the same cycle epact xxiv is not used, when epact xxv and a golden number not greater than 11 coincide; and likewise why epact xxvi is not in use in the same cycle, when epact 25 and a golden number greater than 11 coincide.]

This anticipation, moreover, of epact 25 — set in a different colour or character — is so far from disturbing the lunations in the Calendar that it rather brings them into correct order. For each lunation ends on one of the earlier 30 days of January [and] is the first of the whole [set]. With that epact 25, the first lunation of the year, ending on January 5th, is made 30 days long; the second, ending on February 3rd, only 29 days (though it too would be 30 days if epact xxv were taken below epact xxvi); the third is then again made 30 days, the fourth 29 days, and so on, as the order of alternating lunations of 30 and 29 days requires. The thirteenth, extraordinary lunation of that year — for whenever epact 25 is in use, the lunar year is embolismic, as will be said later — is likewise made 30 days; whereas, if epact xxv (assigned to the same day as [epact] xxiii) were running, it would be only 29 days. In short, there are just as many 30-day lunations while epact 25 (of a different colour or character) is running as are required when the other epact xxv is in use: for there are seven in the one case as in the other, although they proceed differently in the one and in the other. To this is added that the paschal lunation, when traced by epact 25 of a different colour or character, corresponds more exactly to the mean motion of the Moon. This will

become clear if the lunations marked by golden numbers greater than 11 are carefully compared with the calculation of the Moon's mean motion; for we shall generally find them shown by those golden numbers greater than 11 a little later than the Moon's mean motion requires. Therefore, since the paschal lunation beginning on April 4th — which is shown as marked by epact 25 with a character or colour different from the others, and which, as we said above, always runs with some golden number greater than 11 — begins one day earlier than it would if it were indicated by epact xxv assigned to April 5th, it plainly follows that the paschal lunation which that earlier epact 25 begins is more in accord with the Moon's mean motion than the one indicated by epact xxv placed at April 5th (running with the same golden number as the former runs with), because this latter begins one day later.

[Margin: That epact 25, of a different colour or character, placed opposite epact xxvi, does not disturb the lunations.]

But someone may ask why, in the equation of the lunar months — that is, in the placing of two epacts at one and the same day in six positions of the Calendar, so that the lunations may be constituted on alternate days of 30 and 29 — these two, xxv and xxiv, were adopted, set opposite February 5th, April 5th, June 5th, August 5th, September 29th, and November 27th, rather than two others; since it could equally well have been done with any two epacts, and especially with epacts * and xxix, which are set at the end of January and the beginning of February — so that this equation, of course, might be established after the first lunar month of 30 days had elapsed, as we read was done by Julius Caesar in the golden-number cycle, as Paul of Middelburg [Paulus Middelburgensis] testifies (book 2), where he sets out the Roman Calendar together with Julius Caesar's lunar cycle, in which we see the equation applied at the end of January and of March in the golden numbers 1 and 9. And the same was done by the author of the new Calendar, as appears in the *Compendium of the New Method of Restoring the Calendar* [Compendium novae rationis restituendi Calendarii], sent in 1577 to the Christian Princes by Gregory XIII [Gregorio XIII]. For there the equation of the Moon was made on the last day of January, the last of March, on May 29th, and so on, on which days these two epacts, ω [Greek: ω (ōmega), used here as the symbol for epact 30] and xxix, are jointly written — of which ω signifies epact 30, or o [the round nought]. Just as in the new Calendar there is epact *: above the same days, opposite epact 1, epact * is placed, which in that Compendium signifies the same as ω , and has only a different figure. In the same way, in the new Calendar epact 25, formed in a different character or colour, is written above epacts xxv and xxiv, which are placed at the same day; and the upper epact 25 differs from the

lower xxv only in figure or colour. If, I say, anyone should so ask, let him know that these two epacts, xxv and xxiv, were chosen above all for the equation of the Moon because in this way the lunations according to the cycle of 30 epacts — and especially the 30 paschal lunations — are made to agree better with the lunations of the golden numbers of the Council of Nicaea, whose decrees and ordinances we have retained in all things, so far as it could be done and as was fitting. For we see that the equation of the Moon was made at almost the same places by the golden numbers of the old Calendar as it is made in the new Calendar by epacts xxv and xxiv.

[Margin: Why the equation of the lunar months was made rather by epacts xxv and xxiv placed together than by others.]

Next, just as in that golden-number cycle all 19 paschal lunations contain only 29 days — the first beginning on March 8th, the last on April 5th — so too in this new cycle of epacts all 30 paschal lunations are bounded by the same extreme days, that is, March 8th and April 5th, and each contains 29 days, except the two lunations of epacts 25 and xxiv, when 25 (which rarely happens) [runs] with some golden number from the latter eight, which are greater than

[Margin: Why not all the paschal lunations in the new Calendar are of 29 days, as in the old.]

11. For these two alone are of 30 days — which ought not to seem surprising. For since the Fathers of the Council of Nicaea assigned 29 days to the paschal new moons, because they are counted from March 8th to April 5th, the 19 golden numbers could easily be arranged within those days, on the rule that each should make up a lunation of 29 days. But since there are 30 epacts, they cannot in any way all be arranged within those same 29 days, unless on some one and the same day two are placed together, as was done on April 5th. From this it comes about that the lunation of epact xxiv — and therefore also of epact 25, placed above xxiv — is constituted of 30 days; which would not have happened if the equation of the Moon had been applied after April 5th. But in that case, for the individual epacts to assign 30 days to the individual paschal lunations, it would have been necessary to give the paschal new moons 30 days, so that the last would begin after April 5th — which is as yet unheard-of in the Church.

But if the equation of the Moon were established at the end of March, as was indicated in the *Compendium of the New Method of Restoring the Calendar*, seven paschal lunations of 30 days would result, as plainly appears in that Calendar.

Therefore, in order that the paschal new moons of the new Calendar might be confined within the same limits by which they were bounded from the Council of Nicaea down to the new Calendar, and that only two paschal lunations should comprise 30 days — and so that we might depart less from the ancient custom of the Church — we rejected that equation described in the Compendium and chose the one we have set out; since according to it all the new moons, and especially the paschal ones, are found to have fallen at the time of the Council of Nicaea on exactly the same days on which the golden numbers of the old Calendar show them to have occurred — which by no means happens under the other equation of the Compendium. And this will be evident to anyone if he resolves into golden numbers the epacts both of the new Calendar and of the one described in the Compendium — by what method this ought to be done, we shall teach a little further on.

[Margin: Why epact 19, in a different colour or character, is placed at the last day of December opposite epact 20 [numeral foxed — form uncertain].]

In addition, at the end of December, next to epact 20, epact 19 must also be placed — in a character or colour different from the others — to show the new moon on the last day of December, when epact xix and golden number 19 coincide: which happens only once in many thousands of years, namely once in the thirty nineteen-year cycles of the expanded table, when its eighth line, prefixed with the capital letter D, is in use, as happens at the present time. For in that line alone is epact xix written under golden number 19. That epact 19, fixed to the last day of December, must necessarily mark the new moon at that time will become plain as follows. To the epact running with golden number 19 — whatever it may be — 12 must be added (whereas to the others only 11 are added) in order to form the following year's epact — just as, before the correction of the Calendar, to the last epact xxix running with golden number 19 there were likewise added 12, so that the first epact xi might again be composed, since the lunar cycle necessarily requires this, as we shall show below. It comes about, then, that while epact xix is running, since adding 12 to 19 makes 31, and casting out 30 leaves 1 as the epact of the following year. Therefore, since the use of epact 1 begins in January, where it is assigned to the 30th day, unless epact 19 were repeated at the end of December — so that from it a new moon might begin again before January — the lunation beginning on December 2nd, where epact xix is written, would embrace 59 days, namely as many as are counted from December 2nd to January 29th; because in December there is no other epact xix besides that one, from which a new moon can begin, nor in January any other epact 1 before the 30th day that would present the start of a new moon.

The reckoning of the lunations investigated by the nineteen-year cycle therefore necessarily requires either that epact 19 be repeated on the last day of December — so that the lunation begun on December 2nd by epact xix should contain only 29 days, while another, beginning on the last day [of December] from the same [epact 19], comprises 30 days, namely as many as are counted from the last of December to [January] 29th, opposite epact * — [and] that the lunation beginning on the first day of January from epact * be made 30 days, while another beginning on the first day of January from epact 1 embraces only 29 days; or else that epact 1 be placed at the last day of December in place of epact 19 [?], so that the lunation beginning there should contain [the requisite] days, [the lunation] which, assigned to epact xix at December 2nd, was begun as one of [29] days. But because we began the distribution of the epacts in the Calendar from the first day of January, it does not seem fitting that this equation should be made right at the beginning of the lunations by two [epacts] fixed to it; and so that equation was rejected onto the preceding day, that is, to the end of December, where by the natural order epact 1 ought to be placed if the year did not begin from January — just as in the other months epact 1 is placed above *. But since it did not seem right to repeat it so soon at the end of December, especially since it does not immediately follow, in retrograde order, epact 20 set at the end of December, we therefore judged that epact 19 should be written next to that 20, since these two epacts, 20 and 19, follow each other in correct order.

[Margin: Because epact 19, of a different colour or character, is placed at the last day of December, two new moons cannot fall on the same day in the same nineteen-year cycle.]

Nor indeed does it follow, from this placing of epact 19 next to epact 20, that two new moons fall on that same day within the span of 19 years. For in the cycle in which epact xix runs with golden number 19, epact xx is not in use, as appears in the line of the expanded table prefixed with the capital letter D. For in that line, under golden number 19, epact xix is indeed written, but epact xx is not found among the nineteen epacts of that cycle.

And this is the natural arrangement of the cycle of thirty epacts through the days of the months in the Calendar — and indeed the only one — showing the new moons, the full moons, and the age of the Moon each day at any time; although the new moons are sometimes forced to move up or down in the Calendar, on account of the equation of the Moon that must necessarily be applied, or on account of the intercalary day to be omitted in each span of four hundred years. For this cycle of epacts, thus arranged in the Calendar, can be adapted

perpetually and to any length of the year, provided the due equation is applied at its proper times, as will be explained in the next chapter.

But here is the new Calendar, with the epacts arranged through the days of the months by the method we have explained; to which we have joined the Calendar of the Compendium, so that all may understand that in our Calendar only two

paschal lunations are of 30 days — namely those shown by epact 25 (of a different character or colour) and by epact xxiv; whereas in the Calendar of the Compendium, seven paschal lunations contain 30 days, namely those indicated by epacts *, xxix, xxviii, xxvii, xxvi, xxv, and xxiv.

THERE FOLLOWS

THE GREGORIAN CALENDAR, with the epacts arranged in place of the golden numbers through the days of the months.

The Gregorian Calendar — January, February, March.

Each month presents four columns: **Epact** (*Epactae*, Roman numerals; * = the epact-30 asterisk of the new Calendar); **Dom.** (*Litterae Dominicales*, the dominical letters); **Roman day** (the Roman Kalends/Nones/Ides reckoning; CAL. = Kalends, NON = Nones, IDIB. = Ides, Prid. = *pridie*); and **Day** (*Dies Mensis*, the civil day of the month). The **[Eq.]** column records the marginal doubled-epact marks printed in the left margin (the different-colour/-character epacts of the lunar-month equation): Arabic 25 and Roman xxv, transcribed exactly as the two distinct sorts.

Ianuaris (January)

| Epact | Dom. | Roman day | Day | [Eq.] |
|--------|------|-----------|-----|-------|
| * | A | CAL. | 1 | |
| xxix | b | iiii | 2 | |
| xxviii | c | iii | 3 | |
| xxvii | d | Prid. | 4 | |
| xxvi | e | NON | 5 | |
| xxv | f | viii | 6 | 25 |
| xxiiii | g | vii | 7 | |
| xxiii | A | vi | 8 | |
| xxii | b | v | 9 | |

| Epact | Dom. | Roman day | Day | [Eq.] |
|-------|------|-----------|-----|-------|
| xxi | c | iiii | 10 | |
| xx | d | iii | 11 | |
| xix | e | Prid. | 12 | |
| xviii | f | IDIB. | 13 | |
| xvii | g | xix | 14 | |
| xvi | A | xviii | 15 | |
| xv | b | xvii | 16 | |
| xiiii | c | xvi | 17 | |
| xiii | d | xv | 18 | |
| xii | e | xiiii | 19 | |
| xi | f | xiii | 20 | |
| x | g | xii | 21 | |
| ix | A | xi | 22 | |
| viii | b | x | 23 | |
| vii | c | ix | 24 | |
| vi | d | viii | 25 | |
| v | e | vii | 26 | |
| iiii | f | vi | 27 | |
| iii | g | v | 28 | |
| ii | A | iiii | 29 | |
| i | b | iii | 30 | |
| * | c | Prid. | 31 | |

Februarius (February)

| Epact | Dom. | Roman day | Day | [Eq.] |
|--------|------|-----------|-----|-------|
| xxix | d | CAL. | 1 | |
| xxviii | e | iiii | 2 | |
| xxvii | f | iii | 3 | |
| xxvi | g | Prid. | 4 | 25 |
| xxiii | A | NON | 5 | xxv |
| xxiii | b | viii | 6 | |

| Epact | Dom. | Roman day | Day | [Eq.] |
|-------|------|-----------|-----|-------|
| xxii | c | vii | 7 | |
| xxi | d | vi | 8 | |
| xx | e | v | 9 | |
| xix | f | iiii | 10 | |
| xviii | g | iii | 11 | |
| xvii | A | Prid. | 12 | |
| xvi | b | IDIB. | 13 | |
| xv | c | xvi | 14 | |
| xiiii | d | xv | 15 | |
| xiii | e | xiiii | 16 | |
| xii | f | xiii | 17 | |
| xi | g | xii | 18 | |
| x | A | xi | 19 | |
| ix | b | x | 20 | |
| viii | c | ix | 21 | |
| vii | d | viii | 22 | |
| vi | e | vii | 23 | |
| v | f | vi | 24 | |
| iiii | g | v | 25 | |
| iii | A | iiii | 26 | |
| ii | b | iii | 27 | |
| i | c | Prid. | 28 | |

Martius (March)

| Epact | Dom. | Roman day | Day | [Eq.] |
|--------|------|-----------|-----|-------|
| * | d | CAL. | 1 | |
| xxix | e | vi | 2 | |
| xxviii | f | v | 3 | |
| xxvii | g | iiii | 4 | |
| xxvi | A | iii | 5 | |
| xxv | b | Prid. | 6 | 25 |

| Epact | Dom. | Roman day | Day | [Eq.] |
|--------|------|-----------|-----|-------|
| xxiiii | c | NON | 7 | |
| xxiii | d | viii | 8 | |
| xxii | e | vii | 9 | |
| xxi | f | vi | 10 | |
| xx | g | v | 11 | |
| xix | A | iiii | 12 | |
| xviii | b | iii | 13 | |
| xvii | c | Prid. | 14 | |
| xvi | d | IDIB. | 15 | |
| xv | e | xvii | 16 | |
| xiiii | f | xvi | 17 | |
| xiii | g | xv | 18 | |
| xii | A | xiiii | 19 | |
| xi | b | xiii | 20 | |
| x | c | xii | 21 | |
| ix | d | xi | 22 | |
| viii | e | x | 23 | |
| vii | f | ix | 24 | |
| vi | g | viii | 25 | |
| v | A | vii | 26 | |
| iiii | b | vi | 27 | |
| iii | c | v | 28 | |
| ii | d | iiii | 29 | |
| i | e | iii | 30 | |
| * | f | Prid. | 31 | |

The epact month-tables continue (*Apologia adversus Maestlinum, Liber Secundus, Caput III*). Each panel gives, day by day, the epact whose new moon falls on that day, alongside the dominical letter, the Roman-calendar reckoning, and the civil day of the month. The four columns are headed **Epactæ** (epacts), **Literæ Dñic.** (dominical letters), an unlabeled column for the Roman-calendar day (Kalends / Nones / Ides countdown), and **Dies Mēf.** (day of the month). The doubled epact 25 is set in two sorts — Arabic **25** and Roman **xxv** — which fall on

different rows by the lunar equation; where one form stands in the epact column, the other is set as a small marginal marker to its left. The epact-30 slot is the asterisk *.

Aprilis (April)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxix | g | CAL. | 1 |
| xxviii | A | iiii | 2 |
| xxvii | b | iii | 3 |
| xxvi | c | Prid. | 4 |
| xxiii | d | NON | 5 |
| xxiii | e | viii | 6 |
| xxii | f | vii | 7 |
| xxi | g | vi | 8 |
| xx | A | v | 9 |
| xix | b | iiii | 10 |
| xviii | c | iii | 11 |
| xvii | d | Prid. | 12 |
| xvi | e | IDIB. | 13 |
| xv | f | xviii | 14 |
| xiiii | g | xvii | 15 |
| xiii | A | xvi | 16 |
| xii | b | xv | 17 |
| xi | c | xiiii | 18 |
| x | d | xiii | 19 |
| ix | e | xii | 20 |
| viii | f | xi | 21 |
| vii | g | x | 22 |
| vi | A | ix | 23 |
| v | b | viii | 24 |
| iiii | c | vii | 25 |
| iii | d | vi | 26 |
| ii | e | v | 27 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| i | f | iiii | 28 |
| * | g | iii | 29 |
| xxix | A | Prid. | 30 |

[Margin: to the left of the epact column, at the 26→24 gap (days 4–5), the doubled epact is set **25** (upper) over **xxv** (lower). The epact column itself skips 25, running xxvi → xxiiii.]

Maius (May)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxviii | b | CAL. | 1 |
| xxvii | c | vi | 2 |
| xxvi | d | v | 3 |
| xxv | e | iiii | 4 |
| xxiiii | f | iii | 5 |
| xxiii | g | Prid. | 6 |
| xxii | A | NON | 7 |
| xxi | b | viii | 8 |
| xx | c | vii | 9 |
| xix | d | vi | 10 |
| xviii | e | v | 11 |
| xvii | f | iiii | 12 |
| xvi | g | iii | 13 |
| xv | A | Prid. | 14 |
| xiiii | b | IDIB. | 15 |
| xiii | c | xvii | 16 |
| xii | d | xvi | 17 |
| xi | e | xv | 18 |
| x | f | xiiii | 19 |
| ix | g | xiii | 20 |
| viii | A | xii | 21 |
| vii | b | xi | 22 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| vi | c | x | 23 |
| v | d | ix | 24 |
| iiii | e | viii | 25 |
| iii | f | vii | 26 |
| ii | g | vi | 27 |
| i | A | v | 28 |
| * | b | iiii | 29 |
| xxix | c | iii | 30 |
| xxviii | d | Prid. | 31 |

[Margin: to the left of the epact column, near days 3–4, the doubled epact 25 / **xxv**. Here the Roman **xxv** stands in the epact column at day 4; the Arabic 25 is the marginal form.]

Iunius (June)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxvii | e | CAL. | 1 |
| xxvi | f | iiii | 2 |
| xxiii | g | iii | 3 |
| xxiii | A | Prid. | 4 |
| xxii | b | NON | 5 |
| xxi | c | viii | 6 |
| xx | d | vii | 7 |
| xix | e | vi | 8 |
| xviii | f | v | 9 |
| xvii | g | iiii | 10 |
| xvi | A | iii | 11 |
| xv | b | Prid. | 12 |
| xiiii | c | IDIB. | 13 |
| xiii | d | xviii | 14 |
| xii | e | xvii | 15 |
| xi | f | xvi | 16 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| x | g | xv | 17 |
| ix | A | xiiii | 18 |
| viii | b | xiii | 19 |
| vii | c | xii | 20 |
| vi | d | xi | 21 |
| v | e | x | 22 |
| iiii | f | ix | 23 |
| iii | g | viii | 24 |
| ii | A | vii | 25 |
| i | b | vi | 26 |
| * | c | v | 27 |
| xxix | d | iiii | 28 |
| xxviii | e | iii | 29 |
| xxvii | f | Prid. | 30 |

[Margin: to the left of the epact column, at the 26→24 gap (days 2–3), the doubled epact **25** (upper) over **xxv** (lower). The epact column skips 25, running xxvi → xxiiii.]

Iulius (July)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxvi | g | CAL. | 1 |
| xxv | A | vi | 2 |
| xxiiii | b | v | 3 |
| xxiii | c | iiii | 4 |
| xxii | d | iii | 5 |
| xxi | e | Prid. | 6 |
| xx | f | NON | 7 |
| xix | g | viii | 8 |
| xviii | A | vii | 9 |
| xvii | b | vi | 10 |
| xvi | c | v | 11 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xv | d | iiii | 12 |
| xiiii | e | iii | 13 |
| xiii | f | Prid. | 14 |
| xii | g | IDIB. | 15 |
| xi | A | xvii | 16 |
| x | b | xvi | 17 |
| ix | c | xv | 18 |
| viii | d | xiiii | 19 |
| vii | e | xiii | 20 |
| vi | f | xii | 21 |
| v | g | xi | 22 |
| iiii | A | x | 23 |
| iii | b | ix | 24 |
| ii | c | viii | 25 |
| i | d | vii | 26 |
| * | e | vi | 27 |
| xxix | f | v | 28 |
| xxviii | g | iiii | 29 |
| xxvii | A | iii | 30 |
| xxvi | b | Prid. | 31 |

[Margin: a marginal Arabic **25** stands to the left of the epact column near day 2 (where the Roman **xxv** occupies the epact column) and again near day 31 (beside the wrap value **xxvi**).]

Augustus (August)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxiiii | c | CAL. | 1 |
| xxiii | d | iiii | 2 |
| xxii | e | iii | 3 |
| xxi | f | Prid. | 4 |
| xx | g | NON | 5 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xix | A | viii | 6 |
| xviii | b | vii | 7 |
| xvii | c | vi | 8 |
| xvi | d | v | 9 |
| xv | e | iiii | 10 |
| xiiii | f | iii | 11 |
| xiii | g | Prid. | 12 |
| xii | A | IDIB. | 13 |
| xi | b | xix | 14 |
| x | c | xviii | 15 |
| ix | d | xvii | 16 |
| viii | e | xvi | 17 |
| vii | f | xv | 18 |
| vi | g | xiiii | 19 |
| v | A | xiii | 20 |
| iiii | b | xii | 21 |
| iii | c | xi | 22 |
| ii | d | x | 23 |
| i | e | ix | 24 |
| * | f | viii | 25 |
| xxix | g | vii | 26 |
| xxviii | A | vi | 27 |
| xxvii | b | v | 28 |
| xxvi | c | iiii | 29 |
| xxv | d | iii | 30 |
| xxiiii | e | Prid. | 31 |

[Margin: a marginal Roman **xxv** stands to the left of the epact column at day 1 (where the epact column reads xxiiii); a marginal Arabic **25** stands near day 30 (where the Roman **xxv** occupies the epact column).]

September (September)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxiii | f | CAL. | 1 |
| xxii | g | iiii | 2 |
| xxi | A | iii | 3 |
| xx | b | Prid. | 4 |
| xix | c | NON | 5 |
| xviii | d | viii | 6 |
| xvii | e | vii | 7 |
| xvi | f | vi | 8 |
| xv | g | v | 9 |
| xiiii | A | iiii | 10 |
| xiii | b | iii | 11 |
| xii | c | Prid. | 12 |
| xi | d | IDIB. | 13 |
| x | e | xviii | 14 |
| ix | f | xvii | 15 |
| viii | g | xvi | 16 |
| vii | A | xv | 17 |
| vi | b | xiiii | 18 |
| v | c | xiii | 19 |
| iiii | d | xii | 20 |
| iii | e | xi | 21 |
| ii | f | x | 22 |
| i | g | ix | 23 |
| * | A | viii | 24 |
| xxix | b | vii | 25 |
| xxviii | c | vi | 26 |
| xxvii | d | v | 27 |
| xxvi | e | iiii | 28 |
| xxviii | f | iii | 29 |
| xxiii | g | Prid. | 30 |

[Margin: to the left of the epact column, at the 26→24 gap (days 28–29), the doubled epact 25 (upper) over **xxv** (lower). The epact column skips 25, running xxvi → xxiii.]

October (October)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxii | A | CAL. | 1 |
| xxi | b | vi | 2 |
| xx | c | v | 3 |
| xix | d | iiii | 4 |
| xviii | e | iii | 5 |
| xvii | f | Prid. | 6 |
| xvi | g | NON | 7 |
| xv | A | viii | 8 |
| xiiii | b | vii | 9 |
| xiii | c | vi | 10 |
| xii | d | v | 11 |
| xi | e | iiii | 12 |
| x | f | iii | 13 |
| ix | g | Prid. | 14 |
| viii | A | IDIB. | 15 |
| vii | b | xvii | 16 |
| vi | c | xvi | 17 |
| v | d | xv | 18 |
| iiii | e | xiiii | 19 |
| iii | f | xiii | 20 |
| ii | g | xii | 21 |
| i | A | xi | 22 |
| * | b | x | 23 |
| xxix | c | ix | 24 |
| xxviii | d | viii | 25 |
| xxvii | e | vii | 26 |
| xxvi | f | vi | 27 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxv | g | v | 28 |
| xxiiii | A | iiii | 29 |
| xxiii | b | iii | 30 |
| xxii | c | Prid. | 31 |

[Margin: the Roman **xxv** stands in the epact column at day 28; the corresponding marginal Arabic **25** does not separately resolve on the scan [?].]

November (November)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxi | d | CAL. | 1 |
| xx | e | iiii | 2 |
| xix | f | iii | 3 |
| xviii | g | Prid. | 4 |
| xvii | A | NON | 5 |
| xvi | b | viii | 6 |
| xv | c | vii | 7 |
| xiiii | d | vi | 8 |
| xiii | e | v | 9 |
| xii | f | iiii | 10 |
| xi | g | iii | 11 |
| x | A | Prid. | 12 |
| ix | b | IDIB. | 13 |
| viii | c | xviii | 14 |
| vii | d | xvii | 15 |
| vi | e | xvi | 16 |
| v | f | xv | 17 |
| iiii | g | xiiii | 18 |
| iii | A | xiii | 19 |
| ii | b | xii | 20 |
| i | c | xi | 21 |
| * | d | x | 22 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xxix | e | ix | 23 |
| xxviii | f | viii | 24 |
| xxvii | g | vii | 25 |
| xxvi | A | vi | 26 |
| xxiii | b | v | 27 |
| xxiii | c | iiii | 28 |
| xxii | d | iii | 29 |
| xxi | e | Prid. | 30 |

[Margin: to the left of the epact column, at the 26→24 gap (days 26–27), the doubled epact **25** (upper) over **xxv** (lower). The epact column skips 25, running xxvi → xxiii.]

December (December)

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| xx | f | CAL. | 1 |
| xix | g | iiii | 2 |
| xviii | A | iii | 3 |
| xvii | b | Prid. | 4 |
| xvi | c | NON | 5 |
| xv | d | viii | 6 |
| xiiii | e | vii | 7 |
| xiii | f | vi | 8 |
| xii | g | v | 9 |
| xi | A | iiii | 10 |
| x | b | iii | 11 |
| ix | c | Prid. | 12 |
| viii | d | IDIB. | 13 |
| vii | e | xix | 14 |
| vi | f | xviii | 15 |
| v | g | xvii | 16 |
| iiii | A | xvi | 17 |

| Epactæ | Literæ Dñic. | (Roman day) | Dies Mēf. |
|--------|--------------|-------------|-----------|
| iii | b | xv | 18 |
| ii | c | xiiii | 19 |
| i | d | xiii | 20 |
| * | e | xii | 21 |
| xxix | f | xi | 22 |
| xxviii | g | x | 23 |
| xxvii | A | ix | 24 |
| xxvi | b | viii | 25 |
| xxv | c | vii | 26 |
| xxiiii | d | vi | 27 |
| xxiii | e | v | 28 |
| xxii | f | iiii | 29 |
| xxi | g | iii | 30 |
| xx | A | Prid. | 31 |

[Margin: a marginal Arabic **25** stands to the left of the epact column near days 25–26 (the Roman **xxv** occupies the epact column at day 26). A second marginal marker, Arabic **19**, is set lower in the same margin, near day 31 — the doubled epact 19 (Roman **xix** stands in the epact column at day 2); the exact row of the marginal **19** is uncertain [?].]

SEQVITVR — Here follows

THE CALENDAR OF THE COMPENDIUM of the new method for restoring the Calendar, sent to the Christian Princes by Gregory XIII.

(Sequitur Calendarium Compendii novæ rationis restituendi Calendarij ad Principes Christianos à Gregorio XIII. transmissi.)

These leaves continue the *Calendarium Compendii* (the perpetual calendar in the form the 1577 Compendium transmitted to Gregory XIII), presenting the month-tables for January through September. Each month occupies one panel with four columns: the **Epact** [Epactæ], the **dominical letter** [Literæ Dominicales], the **Roman-calendar day** (the reckoning by Kalends, Nones, and Ides — this column is left unheaded in the source), and the **civil day of the month** [Dies Mensis].

Legend for the transcription below:

- **Mk.** = the thin leftmost margin sub-column, which carries the printed marks: * (asterisk sort) and ☉ (the small circular sort). Blank where the source margin is blank.
- In the **Epactæ** column, the epact value 30 is printed with the circular sort and is rendered ☉ (this is the *Compendium*'s epact-30 glyph — the circular sort, **not** the new-Calendar asterisk). All epact numerals are Roman (e.g. xxv, xxix); no Arabic epact figures occur on these leaves.
- The civil-day column [Dies] is Arabic (1–31); the Roman-day column keeps the printed abbreviations verbatim (CAL. = Kalendæ, NON. = Nonæ, IDIB. = Idibus, Prid. = Pridie).

Ianuarus.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|----------|-----------|-----------|------|
| * | ☉ | A | CAL. | 1 |
| | xxix | b | iiij | 2 |
| | xxviiij | c | iiij | 3 |
| | xxviij | d | Prid. | 4 |
| | xxvj | e | NON. | 5 |
| | xxv | f | viiij | 6 |
| | xxiiiiij | g | vij | 7 |
| | xxiiij | A | vj | 8 |
| | xxij | b | v | 9 |
| | xxj | c | iiij | 10 |
| | xx | d | iiij | 11 |
| | xix | e | Prid. | 12 |
| | xviiij | f | IDIB. | 13 |
| | xviij | g | xix | 14 |
| | xvj | A | xviiij | 15 |
| | xv | b | xviij | 16 |
| | xiiiiij | c | xvj | 17 |
| | xiiij | d | xv | 18 |
| | xij | e | xiiiiij | 19 |
| | xj | f | xiiij | 20 |
| | x | g | xij | 21 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|--------|-----------|-----------|------|
| | ix | A | xj | 22 |
| | viiij | b | x | 23 |
| | vij | c | ix | 24 |
| | vj | d | viiij | 25 |
| | v | e | vij | 26 |
| | iiij | f | vj | 27 |
| | iiij | g | v | 28 |
| | ij | A | iiij | 29 |
| * | j | b | iiij | 30 |
| ☉ | xxix | c | Prid. | 31 |

Februarius.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxviiij | d | CAL. | 1 |
| | xxvij | e | iiij | 2 |
| | xxvj | f | iiij | 3 |
| | xxv | g | Prid. | 4 |
| | xxiiij | A | NON. | 5 |
| | xxiiij | b | viiij | 6 |
| | xxij | c | vij | 7 |
| | xxj | d | vj | 8 |
| | xx | e | v | 9 |
| | xix | f | iiij | 10 |
| | xviiij | g | iiij | 11 |
| | xvij | A | Prid. | 12 |
| | xvj | b | IDIB. | 13 |
| | xv | c | xvj | 14 |
| | xiiiiij | d | xv | 15 |
| | xiiij | e | xiiiiij | 16 |
| | xij | f | xiiij | 17 |
| | xj | g | xij | 18 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|--------|-----------|-----------|------|
| | x | A | xj | 19 |
| | ix | b | x | 20 |
| | viiij | c | ix | 21 |
| | vij | d | viiij | 22 |
| | vj | e | vij | 23 |
| | v | f | vj | 24 |
| | iiij | g | v | 25 |
| | iiij | A | iiij | 26 |
| | ij | b | iiij | 27 |
| | j | c | Prid. | 28 |

Martius.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|----------|-----------|-----------|------|
| * | ☉ | d | CAL. | 1 |
| | xxix | e | vj | 2 |
| | xxviiij | f | v | 3 |
| | xxvij | g | iiij | 4 |
| | xxvj | A | iiij | 5 |
| | xxv | b | Prid. | 6 |
| | xxiiiiij | c | NON. | 7 |
| | xxiiij | d | viiij | 8 |
| | xxij | e | vij | 9 |
| | xxj | f | vj | 10 |
| | xx | g | v | 11 |
| | xix | A | iiij | 12 |
| | xviiij | b | iiij | 13 |
| | xvij | c | Prid. | 14 |
| | xvj | d | IDIB. | 15 |
| | xv | e | xvij | 16 |
| | xiiiiij | f | xvj | 17 |
| | xiiij | g | xv | 18 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|--------|-----------|-----------|------|
| | xij | A | xiiij | 19 |
| | xj | b | xiiij | 20 |
| | x | c | xij | 21 |
| | ix | d | xj | 22 |
| | viiij | e | x | 23 |
| | vij | f | ix | 24 |
| | vj | g | viiij | 25 |
| | v | A | vij | 26 |
| | iiij | b | vj | 27 |
| | iiij | c | v | 28 |
| | ij | d | iiij | 29 |
| * | j | e | iiij | 30 |
| ☉ | xxix | f | Prid. | 31 |

Aprilis.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxviiij | g | CAL. | 1 |
| | xxvij | A | iiij | 2 |
| | xxvj | b | iiij | 3 |
| | xxv | c | Prid. | 4 |
| | xxiiij | d | NON. | 5 |
| | xxiiij | e | viiij | 6 |
| | xxij | f | vij | 7 |
| | xxj | g | vj | 8 |
| | xx | A | v | 9 |
| | xix | b | iiij | 10 |
| | xviiij | c | iiij | 11 |
| | xvij | d | Prid. | 12 |
| | xvj | e | IDIB. | 13 |
| | xv | f | xviiij | 14 |
| | xiiij | g | xvij | 15 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|--------|-----------|-----------|------|
| | xiiij | A | xvj | 16 |
| | xij | b | xv | 17 |
| | xj | c | xiiiij | 18 |
| | x | d | xiiij | 19 |
| | ix | e | xij | 20 |
| | viiij | f | xj | 21 |
| | vij | g | x | 22 |
| | vj | A | ix | 23 |
| | v | b | viiij | 24 |
| | iiiij | c | vij | 25 |
| | iiij | d | vj | 26 |
| | ij | e | v | 27 |
| | j | f | iiiij | 28 |
| * | ⊙ | g | iiij | 29 |
| | xxix | A | Prid. | 30 |

Maius.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxviiij | b | CAL. | 1 |
| | xxvij | c | vj | 2 |
| | xxvj | d | v | 3 |
| | xxv | e | iiiij | 4 |
| | xxiiiij | f | iiij | 5 |
| | xxiiij | g | Prid. | 6 |
| | xxij | A | NON. | 7 |
| | xxj | b | viiij | 8 |
| | xx | c | vij | 9 |
| | xix | d | vj | 10 |
| | xviiij | e | v | 11 |
| | xvij | f | iiiij | 12 |
| | xvj | g | iiij | 13 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xv | A | Prid. | 14 |
| | xiiiij | b | IDIB. | 15 |
| | xiiij | c | xvij | 16 |
| | xij | d | xvj | 17 |
| | xj | e | xv | 18 |
| | x | f | xiiiij | 19 |
| | ix | g | xiiij | 20 |
| | viiij | A | xij | 21 |
| | vij | b | xj | 22 |
| | vj | c | x | 23 |
| | v | d | ix | 24 |
| | iiij | e | viiij | 25 |
| | iiij | f | vij | 26 |
| | ij | g | vj | 27 |
| * | j | A | v | 28 |
| ☉ | xxix | b | iiij | 29 |
| | xxviiij | c | iiij | 30 |
| | xxvij | d | Prid. | 31 |

Iunius.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxvj | e | CAL. | 1 |
| | xxv | f | iiij | 2 |
| | xxiiiij | g | iiij | 3 |
| | xxiiij | A | Prid. | 4 |
| | xxij | b | NON. | 5 |
| | xxj | c | viiij | 6 |
| | xx | d | vij | 7 |
| | xix | e | vj | 8 |
| | xviiij | f | v | 9 |
| | xvij | g | iiij | 10 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xvj | A | iiij | 11 |
| | xv | b | Prid. | 12 |
| | xiiiij | c | IDIB. | 13 |
| | xiiij | d | xviiij | 14 |
| | xij | e | xvij | 15 |
| | xj | f | xvj | 16 |
| | x | g | xv | 17 |
| | ix | A | xiiiij | 18 |
| | viiij | b | xiiij | 19 |
| | vij | c | xij | 20 |
| | vj | d | xj | 21 |
| | v | e | x | 22 |
| | iiiij | f | ix | 23 |
| | iiij | g | viiij | 24 |
| | ij | A | vij | 25 |
| | j | b | vj | 26 |
| * | ☉ | c | v | 27 |
| | xxix | d | iiiij | 28 |
| | xxviiij | e | iiij | 29 |
| | xxvij | f | Prid. | 30 |

Iulius.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxvj | g | CAL. | 1 |
| | xxv | A | vj | 2 |
| | xxiiiij | b | v | 3 |
| | xxiiij | c | iiiij | 4 |
| | xxij | d | iiij | 5 |
| | xxj | e | Prid. | 6 |
| | xx | f | NON. | 7 |
| | xix | g | viiij | 8 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|----------|-----------|-----------|------|
| | xviiij | A | vij | 9 |
| | xvij | b | vj | 10 |
| | xvj | c | v | 11 |
| | xv | d | iiij | 12 |
| | xiiiij | e | iiij | 13 |
| | xiiij | f | Prid. | 14 |
| | xij | g | IDIB. | 15 |
| | xj | A | xvij | 16 |
| | x | b | xvj | 17 |
| | ix | c | xv | 18 |
| | viiiij | d | xiiiij | 19 |
| | vij | e | xiiij | 20 |
| | vj | f | xij | 21 |
| | v | g | xj | 22 |
| | iiij | A | x | 23 |
| | iiij | b | ix | 24 |
| | ij | c | viiiij | 25 |
| * | j | d | vij | 26 |
| ☉ | xxix | e | vj | 27 |
| | xxviiiij | f | v | 28 |
| | xxvij | g | iiij | 29 |
| | xxvj | A | iiij | 30 |
| | xxv | b | Prid. | 31 |

Augustus.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxiiiij | c | CAL. | 1 |
| | xxiiij | d | iiij | 2 |
| | xxij | e | iiij | 3 |
| | xxj | f | Prid. | 4 |
| | xx | g | NON. | 5 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|----------|-----------|-----------|------|
| | xix | A | viiij | 6 |
| | xviiij | b | vij | 7 |
| | xvij | c | vj | 8 |
| | xvj | d | v | 9 |
| | xv | e | iiij | 10 |
| | xiiiiij | f | iiij | 11 |
| | xiiij | g | Prid. | 12 |
| | xij | A | IDIB. | 13 |
| | xj | b | xix | 14 |
| | x | c | xviiij | 15 |
| | ix | d | xvij | 16 |
| | viiij | e | xvj | 17 |
| | vij | f | xv | 18 |
| | vj | g | xiiiiij | 19 |
| | v | A | xiiij | 20 |
| | iiij | b | xij | 21 |
| | iiij | c | xj | 22 |
| | ij | d | x | 23 |
| | j | e | ix | 24 |
| * | ☉ | f | viiij | 25 |
| | xxix | g | vij | 26 |
| | xxviiij | A | vj | 27 |
| | xxvij | b | v | 28 |
| | xxvj | c | iiij | 29 |
| | xxv | d | iiij | 30 |
| | xxiiiiij | e | Prid. | 31 |

September.

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|--------|-----------|-----------|------|
| | xxiiij | f | CAL. | 1 |
| | xxij | g | iiij | 2 |

| Mk. | Epactæ | Lit. Dom. | Roman day | Dies |
|-----|---------|-----------|-----------|------|
| | xxj | A | ijj | 3 |
| | xx | b | Prid. | 4 |
| | xix | c | NON. | 5 |
| | xviiij | d | viiij | 6 |
| | xvij | e | vij | 7 |
| | xvj | f | vj | 8 |
| | xv | g | v | 9 |
| | xiiiij | A | iiiij | 10 |
| | xiiij | b | ijj | 11 |
| | xij | c | Prid. | 12 |
| | xj | d | IDIB. | 13 |
| | x | e | xviiij | 14 |
| | ix | f | xvij | 15 |
| | viiij | g | xvj | 16 |
| | vij | A | xv | 17 |
| | vj | b | xiiiij | 18 |
| | v | c | xiiij | 19 |
| | iiiij | d | xij | 20 |
| | iiij | e | xj | 21 |
| | ijj | f | x | 22 |
| * | j | g | ix | 23 |
| ☉ | xxix | A | viiij | 24 |
| | xxviiij | b | vij | 25 |
| | xxvij | c | vj | 26 |
| | xxvj | d | v | 27 |
| | xxv | e | iiiij | 28 |
| | xxiiiij | f | ijj | 29 |
| | xxiiij | g | Prid. | 30 |

Calendar of the Compendium — Epact Tables (continued): October, November, December

The three panels are set side by side across the leaf. Each panel gives, left to right: the epact (Epactæ), the dominical letter (Literæ Dñic.), the Roman-calendar day, and the civil day of the month (Dies Mensis). The leftmost Mk. column carries the margin sorts (* asterisk and ○ circular epact-30), read panel by panel from the leaf. Roman xxv/xix vs Arabic figures and the ○/* distinction are preserved as printed; the hooked dominical ç (= c) is kept as set.

October

Mk

| . | Epactæ | Lit. Dñic. | Dies (Roman) | Dies Mensis |
|---|--------|------------|--------------|-------------|
| | xxij | A | CAL. | 1 |
| | xxj | b | vj | 2 |
| | xx | c | v | 3 |
| | xix | d | iiij | 4 |
| | xviij | e | iiij | 5 |
| | xvij | f | Prid. | 6 |
| | xvj | g | NON. | 7 |
| | xv | A | viiij | 8 |
| | xiiiij | b | vij | 9 |
| | xiiij | c | vj | 10 |
| | xij | d | v | 11 |
| | xj | e | iiij | 12 |
| | x | f | iiij | 13 |
| | ix | g | Prid. | 14 |
| | viiij | A | IDIB. | 15 |
| | vij | b | xvij | 16 |
| | vj | ç | xvj | 17 |
| | v | d | xv | 18 |
| | iiij | e | xiiiij | 19 |
| | iiij | f | xiiij | 20 |
| | ij | g | xij | 21 |

Mk

| . | Epactæ | Lit. Dñic. | Dies (Roman) | Dies Mensis |
|---|---------|------------|--------------|-------------|
| | j | A | xj | 22 |
| * | ☉ | b | x | 23 |
| | xxix | c | ix | 24 |
| | xxviiij | d | viiij | 25 |
| | xxviij | e | vij | 26 |
| | xxvj | f | vj | 27 |
| | xxv | g | v | 28 |
| | xxiiiij | A | iiiij | 29 |
| | xxiiij | b | iiij | 30 |
| | xxij | c | Prid. | 31 |

November

Mk

| . | Epactæ | Lit. Dñic. | Dies (Roman) | Dies Mensis |
|---|--------|------------|--------------|-------------|
| | xxj | d | CAL. | 1 |
| | xx | e | iiiij | 2 |
| | xix | f | iiij | 3 |
| | xviiij | g | Prid. | 4 |
| | xviij | A | NON. | 5 |
| | xvj | b | viiij | 6 |
| | xv | c | vij | 7 |
| | xiiiij | d | vj | 8 |
| | xiiij | e | v | 9 |
| | xij | f | iiiij | 10 |
| | xj | g | iiij | 11 |
| | x | A | Prid. | 12 |
| | ix | b | IDIB. | 13 |
| | viiij | c | xviiij | 14 |
| | vij | d | xviij | 15 |
| | vj | e | xvj | 16 |
| | v | f | xv | 17 |

Mk

| . | Epactæ | Lit. Dñic. | Dies (Roman) | Dies Mensis |
|---|---------|------------|--------------|-------------|
| | iiiij | g | xiiiij | 18 |
| | iiij | A | xiiij | 19 |
| | ij | b | xij | 20 |
| * | j | c | xj | 21 |
| ☉ | xxix | d | x | 22 |
| | xxviiij | e | ix | 23 |
| | xxvij | f | viiij | 24 |
| | xxvj | g | vij | 25 |
| | xxv | A | vj | 26 |
| | xxiiiij | b | v | 27 |
| | xxiiij | c | iiiij | 28 |
| | xxij | d | iiij | 29 |
| | xxj | e | Prid. | 30 |

December

Mk

| . | Epactæ | Lit. Dñic. | Dies (Roman) | Dies Mensis |
|---|--------|------------|--------------|-------------|
| | xx | f | CAL. | 1 |
| | xix | g | iiiij | 2 |
| | xviiij | A | iiij | 3 |
| | xvij | b | Prid. | 4 |
| | xvj | c | NON. | 5 |
| | xv | d | viiij | 6 |
| | xiiiij | e | vij | 7 |
| | xiiij | f | vj | 8 |
| | xij | g | v | 9 |
| | xj | A | iiiij | 10 |
| | x | b | iiij | 11 |
| | ix | c | Prid. | 12 |
| | viiij | d | IDIB. | 13 |
| | vij | e | xix | 14 |

| Mk | | | | |
|----|---------|------------|--------------|-------------|
| . | Epactæ | Lit. Dñic. | Dies (Roman) | Dies Mensis |
| | vj | f | xviiij | 15 |
| | v | g | xvij | 16 |
| | iiij | A | xvj | 17 |
| | iiij | b | xv | 18 |
| | ij | c | xiiiij | 19 |
| | j | d | xiiij | 20 |
| * | ☉ | e | xij | 21 |
| | xxix | f | xj | 22 |
| | xxviiij | g | x | 23 |
| | xxvij | A | ix | 24 |
| | xxvj | b | viiij | 25 |
| | xxv | c | vij | 26 |
| | xxiiiij | d | vj | 27 |
| | xxiiij | e | v | 28 |
| | xxij | f | iiiij | 29 |
| | xxj | g | iiij | 30 |
| 19 | xx | A | Prid. | 31 |

Once the 30 epacts have been set out in the calendar in the order we have described, the first day of the Moon — that is, the new moon by the usage of the Church — will be declared to fall, in any given year, on those days to which the epact of that year is attached, just as, before the correction, the new moon was said by the Church to occur, in any year, on those days against which the golden number of that year was placed.

[Margin: How the new moons may be investigated, according to the usage of the Church, from the epacts arranged in the calendar.]

These 30 epacts, moreover, will indicate the new moons forever, with no change at all made to them in the calendar — even though, because of the omission of the intercalary day in the centennial years, the new moons drift downward, that is, toward the ends of the months, or over any span of 312½ years move upward, that is, toward the beginnings of the months. The golden numbers cannot achieve this unless they are rearranged in the calendar in various ways — that is, shifted now downward, now upward, as we said above. For whenever the new moons

descend one day toward the ends of the months, they will be indicated by the lower epact, the one next smaller than the one above. For example, if in some year the new moons are indicated by epact xx, and it then happens that an intercalary day is omitted, the same new moons will be indicated by epact xix, which is placed one day below epact xx in the calendar. But if the new moons ascend one day, they will be found by the higher epact, the one next greater than the lower. For example, if in some year the new moons are to be found by that same epact xx, and it happens that they have then moved up one day because of the $312\frac{1}{2}$ years elapsed, the same must be sought by epact xxj, which is written one day above epact xx in the calendar. But when the smaller or the larger epact is to be taken for finding the new moons, we shall explain fully below, when we teach how the epact of any given year is to be sought.

[Margin: By what principle the epacts can indicate the new moons in perpetuity.]

It was, moreover, an excellent plan to have substituted the 30 epacts in the calendar in place of the golden numbers, and to have distributed them in retrograde order through the days of the whole year. For from this anyone can easily recognize that, if one carefully counts all the days of December that remain after the end of the lunation ending in that same month in any year, that number of days not only gives the epact of the following year — that is, the days by which the solar year exceeds the preceding lunar year, as was said above — but also the lunations of the whole following year begin on the days beside which that epact of just so many units has been placed as there were days left over in December after the end of the lunation ending in that month; so that those surplus days give the epact that marks the new moons of the following year. For example, if the end of some lunation in any year falls on the 26th day of December — which happens while epact xxiiij is in force (since a new moon takes its start from the 27th, to which epact xxiiij is attached) — five days of December will be left over, and these give epact v of the following year, which, according to the earlier arrangement of the epacts, is placed beside the 26th of January, on which the new moon will fall that year; because the 25 days of January, together with epact v preceding them and with those five days that were left over in December, make up a complete lunation of 30 days, the number a lunation ending in the month of January usually contains. Likewise, when a lunation ends on the eighth of December — which happens when epact xij is in use — 23 days of December are left over, and for the following year these give epact xxiiij, attached to the eighth of January, on which the new moon will fall that year. And the reckoning is the same for the rest.

[Margin: That the epacts have rightly succeeded in place of the golden numbers, and are aptly arranged in the calendar in retrograde order.]

Nevertheless, when the golden number of a given year is 19, a unit must be added to the days that remain after the lunation ending in December, in order to obtain the epact of the following year — provided that epact xviiij or xix is not then in use. For while epact xviiij is in force together with golden number 19, the last lunation of the year ends on the final day of December, and no day is left over, because that lunation is one of 29 days, whereas it ought to be one of 30 days and to end on the first day of January, as happens when epact xviiij coincides not with golden number 19 but with the others. Therefore, since the following lunation then begins from epact *, which is set against the first of January, the epact of the following year will be * or ☉; so that no unit is to be added to the ☉ of December, which was left over after the last lunation. Likewise, when epact xix and golden number 19 coincide, the last lunation of the year ends on the second-to-last day of December, and one day is left over, since the next following lunation begins on the last day from epact 19 written in the margin, as we said above; and that one surplus day will give epact 1 of the following year without the addition of a unit, because that lunation then contains only 29 days — whereas in other years, when epact xix and golden number 19 do not coincide, it comprises 30 days and closes on the last day of December. Why these two lunations then come to have only 29 days will be explained below, in Chapter v, on the embolisms; and for what reason, in other cases, a unit is added to the days remaining after any lunation ending in December while golden number 19 is in force, we shall set forth in the next chapter.

[Margin: The days of December that remain after the last lunation of the year usually exhibit the epact of the following year.]

DE CONSTRUCTIONE TABVLÆ EXPANSÆ Epactarum, eiusque æquatione, & de inuentione Epactæ quolibet anno proposito. — CAPVT IV.

[On the construction of the Expanded Table of Epacts, its equation, and the finding of the epact for any given year. — Chapter 4.]

Since the new moons, after 19 solar years have elapsed, return to the same days of the months — though not to exactly the same hours, as was said in Chapter 1 of this book — it comes about that, out of the 30 epacts inscribed in the calendar, only 19 are to be taken, in one or in several centuries of years, corresponding to

the 19 golden numbers, each to each, by which the new moons of those years are investigated. For these epacts will indicate the new moons — just as the 19 [golden] numbers once did — for as long as, after 19 complete years, the conjunctions of the luminaries are found always to return to the same days. But as soon as the new moons have rolled forward by one day, whether toward the beginning of the month or toward its end — which will necessarily happen, both on account of the common centennial years and on account of the $312\frac{1}{2}$ years in which the lunations anticipate by one day in the calendar — other 19 epacts, corresponding to the same 19 golden numbers, will have to be brought in; of which some [are not found among the preceding 19 epacts...]

[Margin: Of the 30 epacts only 19 are used, in one or more spans of a hundred years, for showing the new moons.]

are not found among the preceding 19 epacts, while others are already in use among them as well. And so, when the new moons have risen one day toward the beginnings of the months, one must take the 19 epacts that each exceed by one unit the other 19 that were in use up to that time; but if the new moons have descended one day, one must choose the 19 epacts that are each one unit smaller than the immediately preceding 19 epacts, each to each. For in this way it comes about that those 19 epacts show, in the calendar, that the new moons occur one day earlier than the earlier ones, while these others show them one day later. An account must therefore now be given of which 19 epacts, out of all 30, correspond to the 19 golden numbers at any given time, and when the other 19 are to be summoned, and finally by what art, for any proposed year, the epact by which the new moons are shown may be drawn out from the known golden number of that same year. For this purpose a table of epacts must be constructed, which we call the Expanded [table] because it contains 30 lines, each of which embraces 19 epacts corresponding to the 19 golden numbers, so that all the variety may be laid out that can be found among the various 19 epacts and the same 19 golden numbers. Then another table, the equation of the epacts, must be drawn up, by which we may know which of those 30 lines of epacts is to be taken at this or that time. The construction, then, of the expanded table of epacts is as follows.

[Margin: When the 19 epacts one unit greater than the preceding 19 are to be assumed, and when the lesser ones.]

At the head of the table let all 19 golden numbers be written, beginning with golden number 3, which in the time of the Council of Nicaea was prefixed to the first of January — that is, to the first day of the year — in the calendar. Then, in the lowest line, out of all 30 let the 19 epacts be placed below the golden numbers,

beginning from 1 and each exceeding the next by eleven units, 30 being always cast out whenever the eleven units added to the preceding epact make a sum greater than 30 — yet in such a way that the epact following epact xxvij, placed under golden number 6, exceeds it not by eleven but by twelve units, so that under golden number 1 the epact is ix, not viij; because 12 added to 27 makes 39, and, 30 being cast out, ix remains. Now if from each epact of this lowest line one ascends upward through the natural series of numbers — writing this sign * for 30 [xxx], above which j is again written, then ij, iij, iiij, and so on — the whole expanded table of epacts will be composed, in which the epacts of any line exceed one another by eleven units, except for the epacts written under golden number 1. For these exceed the ones preceding, placed under golden number 19, by twelve units, just as in the lowest line. Epact 25, under these eight golden numbers greater [than the rest] — 12, 13, 14, 15, 16, 17, 18, 19 — is to be written in a color or a figure different from the others. Finally, along the left side of the table are to be set the small letters of the alphabet in their natural order, placing the letter a opposite the lowest line, b opposite the second, and so on up to u, the letter o being omitted lest, on account of its resemblance to the numeral character o, it breed confusion. After u, the capital letters of the alphabet are then likewise to be written, the letters I, K, L, O being omitted for the same reason. For I, L, O are letters used for numbers, since I signifies one, L fifty, and O nothing; while capital K differs little from small k, and so one could easily be taken for the other. These letters indicate which line of epacts is to be received into use at any proposed time, as will be clear from the equation table of the epacts. The same letters are also used in the Martyrology for declaring the age of the Moon on any given day, as is evident from the Martyrology restored to the new plan of the calendar.

[Margin: Why letters of the alphabet, rather than years of the Lord, are attached to the lines of the epacts in the expanded table.]

To these thirty lines of the epacts in the expanded table we have attached letters of the alphabet, rather than the years of the Lord to which the individual lines correspond, because we want this expanded table to be permanent and adaptable to any magnitude of the solar year. If, instead, the years of the Lord were set against them, this could not be done — both because not all years can be contained in so small a space, and, above all, because, since the magnitude of the solar year is still uncertain and not yet sufficiently explored, it is likewise uncertain whether the years of the Lord will always answer to those lines of epacts to which they have been prefixed. Therefore, so that I might point out to posterity how to set up another method of equating the solar year, should this

equating method of ours perhaps be found by astronomers after some years to depart from the truth, we have set down letters of the alphabet, so that any one of them may correspond to any year of the Lord. For in this way it comes about that this table of epacts is both permanent and adaptable to any magnitude of the year, provided one learns carefully, from the equation table that we shall presently construct, which letter of the alphabet corresponds to this or that year of the Lord. Only the equation table will need to be changed, if, as we said, some defect is detected in our equation, as we shall explain a little below.

The composition, however, of the equation table of the epacts, which advances by hundred-year steps, will be set up as follows. In the time of the Council of Nicaea, golden number 3 was prefixed to the first day of the year, as is clear from the old calendar; because at that time, whenever the golden number was 3, the new moon fell on the first day of the year, that is, on the first of January, and on those days of the other months against which the same golden number 3 was set. Since, therefore, in the new calendar this epact * has likewise been placed against the first of January, it follows that the first letter of the expanded epact table — the one in which epact * is placed under golden number 3 — corresponds to the years reckoned from those numbers at the time of the Council of Nicaea, and to the other following years as well, until the Moon requires an equation, that is, until the new moons fall on other days. For wherever epact * stands in the new calendar, there golden number 3 stood at the time of the Council of Nicaea; and where epact xj, which follows epact * in the first line of the expanded table, is placed, there golden number 4 was set — the one that follows golden number 3 at the head of the table. And where epact xxij is written, following epact xj, in that place golden number 5 stood. In the same way the remaining epacts, all placed in the first line of the expanded table, have their seats in those places of the calendar opposite which, in the old calendar, the golden numbers answering to them at the head of the same expanded table were placed. This will become clear if we carefully compare the days of the months of the new calendar, set opposite all 19 golden numbers, with the days of the months of the old calendar, set opposite all 19 golden numbers. A few places in the calendar are excepted, in which some difference is found — which is no wonder, because in February and in certain other months of the old calendar the equation of the lunations was made on exactly the same days, so that they were alternately of 30 and 29 days, just as it was made by us through the epacts xxiiij and xxv attached to the same day in six months, as we said a little earlier. Nor can it therefore be said that the cycle of the golden number is not rightly arranged in the old calendar, or the cycle of the epacts in the new; since each has its lunations alternately of 30 and 29 days, as reason requires. For although this happens not on the same [days...]

[Margin: How the expanded table of epacts is to be constructed.]

in exactly the same places. Yet this matters little, since no cycle can correspond in every respect to the celestial lunations, as we shall explain below. The Paschal lunations of March and April, however — which is more to the point — differ in nothing between the old calendar and the new. Therefore, since the Council of Nicaea was held around the year 325, the capital letter P, which is set at the head of the first line of epacts in the expanded table, must be placed to the left of the year 320 in the equation table. We preferred to take this year rather than 325, because it lies close to the time of the Nicene Council and is more conspicuous than 325, being a leap year [bissextilis] — as are the centennial years through which the equation table advances.

Next: since more than 300 years elapsed from the birth of Christ to the Council of Nicaea, the new moons must necessarily have fallen one day later in Christ's time than at the time of the Nicene Council. For over a span of 300 years the new moons anticipate their places by very nearly a whole day in the calendar, as we said above. It follows that in Christ's time the same 19 golden numbers would have answered to 19 different epacts — had this cycle of epacts and the new calendar then been in use — namely to those contained in the second line of the expanded table, each of which is one unit less than the epacts of the first line, one for one. For all the epacts of the second line are placed in the new calendar below the epacts contained in the first line; and so the new moons are indicated one day later by the epacts of the second line than by the epacts written in the first line, which we said were in use at the time of the Nicene Council. And if, in place of the epacts of the second line, the golden numbers were set in the calendar as they answer to those second-line epacts at the head of the expanded table, all the golden numbers would be seen to be one day lower than the golden numbers at the time of the Council of Nicaea. For this reason, in the equation table, next to the year of the Lord 1, the capital letter N must be written — the letter prefixed to the second line of epacts in the expanded table.

[Margin: The new moons of the [golden-number] cycle ought, in the Church's use, for the most part to follow the conjunctions found from the tables.]

[Margin: The new moons of the golden number around the time of the Council of Nicaea were nearly the same as those that occurred in the heavens.]

Further: so that the order of the lunar equation — by which, we said, the new moons anticipate their places by one day over a span of 312½ years — may be rightly established for the years after the Council of Nicaea, we must first fix the

root from which such an equation takes its start. For although, as we said, the first line of epacts in the expanded table agrees with the cycle of the golden number as issued at the time of the Nicene Council, nevertheless the root of the equation is not to be referred to that time, but to many years after that Council — as we shall make plain in the following way. The Church of God, in order duly to celebrate the movable feasts, is not greatly concerned that the new moons found by the cycle should agree exactly with the new moons drawn out from the tables of mean motions. On the contrary, of set purpose it so arranges the cycle in the calendar that its new moons follow very nearly those which are elicited from the tables — lest it should ever happen that the Paschal fourteenth Moon [Luna XIII] which the cycle offers should run ahead of the mean full moon by so great an interval that Easter would be celebrated before it, against the decrees of the Fathers and of the Councils, as we shall teach more fully a little below. Now the cycle of the golden number, as arranged by the Fathers of the Nicene Council, shows that around the year of the Lord 325 the new moons for the most part fell on the same days on which they are known, from the tables of mean motions, to have occurred in the heavens. Therefore that arrangement of the golden number, made at the time of the Nicene Council, cannot be reckoned suited to the Church's use, since it shows the conjunctions of the luminaries to have occurred earlier than the Church's practice requires, and so would not seldom have set Easter to be celebrated before the mean full moon — about which we shall write more below. Rather, it must have begun to serve the purpose (so far as concerns the due celebration of the movable feasts) some years after the Nicene Council had passed — namely, as many as are needed for so great an anticipation of the new moons in the calendar that the golden numbers should now exhibit the same new moons so long a time after the astronomical mean new moons that there is no danger of Easter being celebrated before the mean full moon, except very rarely indeed. This came about in the year of the Lord 550 — that is, 200 years and more after the Council of Nicaea — at the time when Justinian I held the Roman Empire.

[Margin: The new moons of the golden number around the year of the Lord 550 fell later than those in the heavens, and were therefore better suited to the use of the Church.]

For at that time the golden numbers indicated the new moons about sixteen hours later than at the time of the Nicene Council, as is established from the astronomical tables. At that same time, too, all the disputes between the Greeks and the Latins were laid to rest, and the cycle of the golden number was received into use, as it had been arranged in the calendar by Dionysius the Abbot

[Dionysius Exiguus] around the year of the Lord 532, in the reign of that same Justinian I.

[Margin: The root of the equation of the epacts must be referred to the year of the Lord 550; and why.]

Accordingly, the root of the equation is fixed by us at the year 550, because at that time the cycle of the golden number showed the new moons more correctly and more suitably for celebrating the movable feasts, as will be clear from what we are about to say. Nor is it an objection that in this way the Paschal fourteenth Moon [Luna XIII] is sometimes indicated by the cycle later than it should be. For less fault is committed in celebrating Easter if the fifteenth Moon [Luna XV] is taken for the fourteenth [Luna XIII], as Theophilus, Bishop of Alexandria, rightly advises in his letter to the elder Emperor Theodosius; because the greater number contains the lesser, but the lesser does not likewise contain the greater. But since in the equation table we set down only the centennial years, as the more celebrated and better known, we shall lay it down that the Moon anticipates its places by one day over a span of 300 years — although in fact its equation requires $312\frac{1}{2}$ years — so that we forestall the true equation by $12\frac{1}{2}$ years, of which nevertheless account must be taken once the sum collected from them amounts to 100 years.

[Margin: The lunar equation is anticipated every three-hundredth year by $12\frac{1}{2}$ years, of which account must nevertheless be taken when they have completed the sum of 100 years.]

For just as, above, in the equation of the solar year we determined that the intercalary day is to be omitted every hundredth year — forestalling the true equation, according to the Alphonsine tables, by 34 years, of which nevertheless account is likewise taken every fourth centennial year (for when they have grown to the sum of 136 years, unless the customary intercalation of one day were made every fourth centennial year, the equinoxes would slip forward by a whole day toward the ends of the months) — so too, in the equation of the Moon, account must be taken of those $12\frac{1}{2}$ years omitted every three-hundredth year. Thus, when the sum collected from them reaches 100 years, the lunar equation is not to be applied in the three-hundredth year after the last equation, but should anticipate in the calendar only in the four-hundredth year. For since in 300 years we suppose the Moon to anticipate its places by one day $12\frac{1}{2}$ years earlier than it should, it follows that in 600 years we suppose it to anticipate its places 25 years earlier than the matter requires, and in 1,200 years 50 years earlier, and in 2,400 years 100 years earlier than the matter demands. Therefore, since in the span of

100 years the Moon anticipates its places by about eight hours — so that in 300 years we reckon it to anticipate its places by a whole day, that is, by 24 hours — it follows that, if the equation is applied 100 years earlier than it should be, the Moon will have climbed upward in the calendar toward the beginnings of the months by only 16 hours. The equation is therefore not to be applied then; rather, a further 100 years must be waited for, in which the Moon will climb upward by another 8 hours, which together with the previous 16 make 24 — that is, a full...

TABVLA EPACTARVM EXPANSA. AVREI NVMERI. (Table of the Expanded Epacts. The Golden Numbers.)

The single expanded epact table is printed across the two facing pages of the opening. The left leaf (printed p. 68, headed TABVLA EPACTA- / AVREI NVMERI.) carries the golden-number columns **iiij–xj**; the right leaf (printed p. 69, headed RVM EXPANSA. / AVREI NVMERI.) carries the golden-number columns **xij–xix**, then **j** and **ij**. The two half-titles read together as TABVLA EPACTARVM EXPANSA. Both leaves share the same 30 index-letter rows in the left-hand Literæ column. On each leaf the six columns beneath the spanning decorative sub-header spell out the letters **E · P · A · C · T · Æ** (EPACTÆ) across the golden-number heads.

[Margin (left leaf, p. 68): Index letters of the epacts, for the variety of the times, corresponding to the same letters in the table of the equation of the epacts.]

Left leaf (printed p. 68) — golden numbers iiij–xj

| Literæ | iiij | iiij | v | vj | vij | viiij | ix | x | xj |
|--------|---------|-------|--------|---------|-------|--------|---------|-------|---------|
| P | * | xj | xxij | iiij | xiiij | xxv | vj | xvij | xxviiij |
| N | xxix | x | xxj | ij | xij | xxiiij | v | xvj | xxvij |
| M | xxviiij | ix | xx | j | xij | xxiiij | iiij | xv | xxvj |
| H | xxvij | viiij | xix | * | xj | xxij | iiij | xiiij | xxv |
| G | xxvj | vij | xviiij | xxix | x | xxj | ij | xij | xxiiij |
| F | xxv | vj | xvij | xxviiij | ix | xx | j | xij | xxiiij |
| E | xxiiij | v | xvj | xxvij | viiij | xix | * | xj | xxij |
| D | xxiiij | iiij | xv | xxvj | vij | xviiij | xxix | x | xxj |
| C | xxij | iiij | xiiij | xxv | vj | xvij | xxviiij | ix | xx |
| B | xxj | ij | xij | xxiiij | v | xvj | xxvij | viiij | xix |
| A | xx | j | xij | xxiiij | iiij | xv | xxvj | vij | xviiij |
| u | xix | * | xj | xxij | iiij | xiiij | xxv | vj | xvij |
| t | xviiij | xxix | x | xxj | ij | xij | xxiiij | v | xvj |

| Literæ | iiij | iiij | v | vj | vij | viiij | ix | x | xj |
|--------|-------|---------|---------|--------|---------|---------|--------|---------|-------|
| f | xvij | xxviiij | ix | xx | j | xij | xxiiij | iiij | xv |
| r | xvj | xxvij | viiij | xix | * | xj | xxij | iiij | xiiij |
| q | xv | xxvj | vij | xviiij | xxix | x | xxj | ij | xiiij |
| p | xiiij | xxv | vj | xvij | xxviiij | ix | xx | j | xij |
| n | xiiij | xxiiij | v | xvj | xxvij | viiij | xix | * | xj |
| m | xij | xxiiij | iiij | xv | xxvj | vij | xviiij | xxix | x |
| l | xj | xxij | iiij | xiiij | xxv | vj | xvij | xxviiij | ix |
| k | x | xxj | ij | xiiij | xxiiij | v | xvj | xxvij | viiij |
| i | ix | xx | j | xij | xxiiij | iiij | xv | xxvj | vij |
| h | viiij | xix | * | xj | xxij | iiij | xiiij | xxv | vj |
| g | vij | xviiij | xxix | x | xxj | ij | xiiij | xxiiij | v |
| f | vj | xvij | xxviiij | ix | xx | j | xij | xxiiij | iiij |
| e | v | xvj | xxvij | viiij | xix | * | xj | xxij | iiij |
| d | iiij | xv | xxvj | vij | xviiij | xxix | x | xxj | ij |
| c | iiij | xiiij | xxv | vj | xvij | xxviiij | ix | xx | j |
| b | ij | xiiij | xxiiij | v | xvj | xxvij | viiij | xix | * |
| a | j | xij | xxiiij | iiij | xv | xxvj | vij | xviiij | xxix |

Right leaf (printed p. 69) — golden numbers xij–xix, j, ij

On this leaf the doubled epact appears: the value 25 is printed in **Arabic** 25 in the golden-number columns **xij–xix**, but in **Roman** xxv in columns **j** and **ij** (as it is throughout the left leaf). Both forms are transcribed exactly as printed.

| Literæ | xij | xiiij | xiiij | xv | xvj | xvij | xviiij | xix | j | ij |
|--------|-------|--------|-------|-------|--------|------|--------|--------|-------|--------|
| P | ix | xx | j | xij | xxiiij | iiij | xv | xxvj | viiij | xix |
| N | viiij | xix | * | xj | xxij | iiij | xiiij | 25 | vij | xviiij |
| M | vij | xviiij | xxix | x | xxj | ij | xiiij | xxiiij | vj | xvij |
| H | vj | xvij | xxvii | ix | xx | j | xij | xxiiij | v | xvj |
| | | | j | | | | | | | |
| G | v | xvj | xxvij | viiij | xix | * | xj | xxij | iiij | xv |
| F | iiij | xv | xxvj | vij | xviiij | xxix | x | xxj | iiij | xiiij |

| Literæ | xij | xiiij | xliij | xv | xvj | xvii | xviii | xix | j | ij |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| E | iiij | xliij | 25 | vj | xvii | xxviii | ix | xx | ij | xliij |
| D | ij | xliij | xxliij | v | xvj | xxvii | viiij | xix | j | xij |
| C | j | xij | xxliij | liij | xv | xxvj | vij | xviii | * | xj |
| B | * | xj | xxij | liij | xliij | 25 | vj | xvii | xxix | x |
| A | xxix | x | xxj | ij | xliij | xxliij | v | xvj | xxviii | ix |
| u | xxviii | ix | xx | j | xij | xxliij | liij | xv | xxvii | viiij |
| t | xxvii | viiij | xix | * | xj | xxij | liij | xliij | xxvj | vij |
| f | xxvj | vij | xviii | xxix | x | xxj | ij | xliij | xxv | vj |
| r | 25 | vj | xvii | xxviii | ix | xx | j | xij | xxliij | v |
| q | xxliij | v | xvj | xxvii | viiij | xix | * | xj | xxliij | liij |
| p | xxliij | liij | xv | xxvj | vij | xviii | xxix | x | xxij | liij |
| n | xxij | liij | xliij | 25 | vj | xvii | xxviii | ix | xxj | ij |
| m | xxj | ij | xliij | xxliij | v | xvj | xxvii | viiij | xx | j |
| l | xx | j | xij | xxliij | liij | xv | xxvj | vij | xix | * |
| k | xix | * | xj | xxij | liij | xliij | 25 | vj | xviii | xxix |
| i | xviii | xxix | x | xxj | ij | xliij | xxliij | v | xvii | xxviii |
| h | xvii | xxviii | ix | xx | j | xij | xxliij | liij | xvj | xxvii |
| g | xvj | xxvii | viiij | xix | * | xj | xxij | liij | xv | xxvj |
| f | xv | xxvj | vij | xviii | xxix | x | xxj | ij | xliij | xxv |
| e | xliij | 25 | vj | xvii | xxviii | ix | xx | j | xliij | xxliij |
| d | xliij | xxliij | v | xvj | xxvii | viiij | xix | * | xij | xxliij |
| c | xij | xxliij | liij | xv | xxvj | vij | xviii | xxix | xj | xxij |
| b | xj | xxij | liij | xliij | 25 | vj | xvii | xxviii | x | xxj |
| a | x | xxj | ij | xliij | xxliij | v | xvj | xxvii | ix | xx |

Table of the Equation of the Expanded Epact Table

[TABVLA ÆQVATIONIS TABVLÆ EPACTARVM EXPANSÆ]

(Caput IV, continued.)

The table runs across this opening in three panels per page, read left to right and top to bottom, continuing from panel to panel and page to page. For each year of the Lord (given by centuries, with the reform anchor 1582 and its cyclic recurrences at 17582 and 32582), it lists four things: the **index letter** with which one enters the Expanded Epact Table; the **year AD** (*Anni Domini*); whether the year is **bissextile** (Biff. = *bissextilis*, i.e. a leap year); and the **equation mark** in the last column — a single crescent ☾ (one equation), a double crescent ☾☾ (the coincident equation that recurs every 2500 years). A marginal dagger † marks each boundary of the ten-thousand-year index-letter cycle (years 1700, 11700, 21700, 31700, 41700). The crescent-column values are transcribed exactly as read from the leaf; the fixed periodicity of the marks was used only as a cross-check, never to supply a value.

Page 70 — *Libri Secundi*

Panel A (years 1–5000)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| N | 1 | | |
| P | 320 | Biff. | |

[Horizontal rule across the panel between the 320 and 500 rows.]

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| P | 500 | Biff. | |
| a | 800 | Biff. | ☾ |
| b | 1100 | Biff. | ☾ |
| c | 1400 | Biff. | ☾ |

[Sub-heading spanning the panel: **Detractis 10. diebus.** ("Ten days having been subtracted.")]

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| D | 1582 | | |
| D | 1600 | Biff. | |
| † C | 1700 | | |
| C | 1800 | | ☾ ☾ |
| B | 1900 | | |
| B | 2000 | Biff. | |
| B | 2100 | | ☾ |
| A | 2200 | | |
| u | 2300 | | |
| A | 2400 | Biff. | ☾ |
| u | 2500 | | |
| t | 2600 | | |
| t | 2700 | | ☾ |
| t | 2800 | Biff. | |
| f | 2900 | | |
| f | 3000 | | ☾ |
| r | 3100 | | |
| r | 3200 | Biff. | |
| r | 3300 | | ☾ |
| q | 3400 | | |
| p | 3500 | | |
| q | 3600 | Biff. | ☾ |
| p | 3700 | | |
| n | 3800 | | |
| n | 3900 | | ☾ |
| n | 4000 | Biff. | |
| m | 4100 | | |
| l | 4200 | | |
| l | 4300 | | ☾ ☾ |
| l | 4400 | Biff. | |
| k | 4500 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| k | 4600 | | ☾ |
| i | 4700 | | |
| i | 4800 | Biff. | |
| i | 4900 | | ☾ |
| h | 5000 | | |

Panel B (years 5100–9400)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| g | 5100 | | |
| h | 5200 | Biff. | ☾ |
| g | 5300 | | |
| f | 5400 | | |
| f | 5500 | | ☾ |
| f | 5600 | Biff. | |
| e | 5700 | | |
| e | 5800 | | ☾ |
| d | 5900 | | |
| d | 6000 | Biff. | |
| d | 6100 | | ☾ |
| c | 6200 | | |
| b | 6300 | | |
| c | 6400 | Biff. | ☾ |
| b | 6500 | | |
| a | 6600 | | |
| P | 6700 | | |
| a | 6800 | Biff. | ☾ ☾ |
| P | 6900 | | |
| N | 7000 | | |
| N | 7100 | | ☾ |
| N | 7200 | Biff. | |
| M | 7300 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| M | 7400 | | ☾ |
| H | 7500 | | |
| H | 7600 | Biff. | |
| H | 7700 | | ☾ |
| G | 7800 | | |
| F | 7900 | | |
| G | 8000 | Biff. | ☾ |
| F | 8100 | | |
| E | 8200 | | |
| E | 8300 | | ☾ |
| E | 8400 | Biff. | |
| D | 8500 | | |
| D | 8600 | | ☾ |
| C | 8700 | | |
| C | 8800 | Biff. | |
| C | 8900 | | ☾ |
| B | 9000 | | |
| A | 9100 | | |
| A | 9200 | Biff. | |
| A | 9300 | | ☾ ☾ |
| u | 9400 | | |

Panel C (years 9500–13800)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| t | 9500 | | |
| u | 9600 | Biff. | ☾ |
| t | 9700 | | |
| f | 9800 | | |
| f | 9900 | | ☾ |
| f | 10000 | Biff. | |
| r | 10100 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| r | 10200 | | ☾ |
| q | 10300 | | |
| q | 10400 | Biff. | |
| q | 10500 | | ☾ |
| p | 10600 | | |
| n | 10700 | | |
| p | 10800 | Biff. | ☾ |
| n | 10900 | | |
| m | 11000 | | |
| m | 11100 | | ☾ |
| m | 11200 | Biff. | |
| l | 11300 | | |
| l | 11400 | | ☾ |
| k | 11500 | | |
| k | 11600 | Biff. | |
| † i | 11700 | | |
| i | 11800 | | ☾ ☾ |
| h | 11900 | | |
| h | 12000 | Biff. | |
| h | 12100 | | ☾ |
| g | 12200 | | |
| f | 12300 | | |
| g | 12400 | Biff. | ☾ |
| f | 12500 | | |
| e | 12600 | | |
| e | 12700 | | ☾ |
| e | 12800 | Biff. | |
| d | 12900 | | |
| d | 13000 | | ☾ |
| c | 13100 | | |
| c | 13200 | Biff. | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| c | 13300 | | ☾ |
| b | 13400 | | |
| a | 13500 | | |
| b | 13600 | Biff. | ☾ |
| a | 13700 | | |
| P | 13800 | | |

Page 71 — *Caput IV.*

Panel A (years 13900–19000)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| P | 13900 | | ☾ |
| P | 14000 | Biff. | |
| N | 14100 | | |
| M | 14200 | | |
| M | 14300 | | ☾ ☾ |
| M | 14400 | Biff. | |
| H | 14500 | | |
| H | 14600 | | ☾ |
| G | 14700 | | |
| G | 14800 | Biff. | |
| G | 14900 | | ☾ |
| F | 15000 | | |
| E | 15100 | | |
| F | 15200 | Biff. | ☾ |
| E | 15300 | | |
| D | 15400 | | |
| D | 15500 | | ☾ |
| D | 15600 | Biff. | |
| C | 15700 | | |
| C | 15800 | | ☾ |
| B | 15900 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| B | 16000 | Biff. | |
| B | 16100 | | ☾ |
| A | 16200 | | |
| u | 16300 | | |
| A | 16400 | Biff. | ☾ |
| u | 16500 | | |
| t | 16600 | | |
| f | 16700 | | |
| t | 16800 | Biff. | ☾ ☾ |
| f | 16900 | | |
| r | 17000 | | |
| r | 17100 | | ☾ |
| r | 17200 | Biff. | |
| q | 17300 | | |
| q | 17400 | | ☾ |
| p | 17582 | | |
| p | 17600 | Biff. | |
| p | 17700 | | ☾ |
| n | 17800 | | |
| m | 17900 | | |
| n | 18000 | Biff. | ☾ |
| m | 18100 | | |
| l | 18200 | | |
| l | 18300 | | ☾ |
| l | 18400 | Biff. | |
| k | 18500 | | |
| k | 18600 | | ☾ |
| i | 18700 | | |
| i | 18800 | Biff. | |
| i | 18900 | | ☾ |
| h | 19000 | | |

Panel B (years 19100–24200)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| g | 19100 | | |
| g | 19200 | Biff. | |
| g | 19300 | | ☾ ☾ |
| f | 19400 | | |
| e | 19500 | | |
| f | 19600 | Biff. | ☾ |
| e | 19700 | | |
| d | 19800 | | |
| d | 19900 | | ☾ |
| d | 20000 | Biff. | |
| c | 20100 | | |
| c | 20200 | | ☾ |
| b | 20300 | | |
| b | 20400 | Biff. | |
| b | 20500 | | ☾ |
| a | 20600 | | |
| P | 20700 | | |
| a | 20800 | Biff. | ☾ |
| P | 20900 | | |
| N | 21000 | | |
| N | 21100 | | ☾ |
| N | 21200 | Biff. | |
| M | 21300 | | |
| M | 21400 | | ☾ |
| H | 21500 | | |
| H | 21600 | Biff. | |
| † G | 21700 | | |
| G | 21800 | | ☾ ☾ |
| F | 21900 | | |
| F | 22000 | Biff. | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| F | 22100 | | ☾ |
| E | 22200 | | |
| D | 22300 | | |
| E | 22400 | Biff. | ☾ |
| D | 22500 | | |
| C | 22600 | | |
| C | 22700 | | ☾ |
| C | 22800 | Biff. | |
| B | 22900 | | |
| B | 23000 | | ☾ |
| A | 23100 | | |
| A | 23200 | Biff. | |
| A | 23300 | | ☾ |
| u | 23400 | | |
| t | 23500 | | |
| u | 23600 | Biff. | ☾ |
| t | 23700 | | |
| f | 23800 | | |
| f | 23900 | | ☾ |
| f | 24000 | Biff. | |
| r | 24100 | | |
| q | 24200 | | |

Panel C (years 24300–29400)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| q | 24300 | | ☾ ☾ |
| q | 24400 | Biff. | |
| p | 24500 | | |
| p | 24600 | | ☾ |
| n | 24700 | | |
| n | 24800 | Biff. | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| n | 24900 | | ☾ |
| m | 25000 | | |
| l | 25100 | | |
| m | 25200 | Biff. | ☾ |
| l | 25300 | | |
| k | 25400 | | |
| k | 25500 | | ☾ |
| k | 25600 | Biff. | |
| i | 25700 | | |
| i | 25800 | | ☾ |
| h | 25900 | | |
| h | 26000 | Biff. | |
| h | 26100 | | ☾ |
| g | 26200 | | |
| f | 26300 | | |
| g | 26400 | Biff. | ☾ |
| f | 26500 | | |
| e | 26600 | | |
| d | 26700 | | |
| e | 26800 | Biff. | ☾ ☾ |
| d | 26900 | | |
| c | 27000 | | |
| c | 27100 | | ☾ |
| c | 27200 | Biff. | |
| b | 27300 | | |
| b | 27400 | | ☾ |
| a | 27500 | | |
| a | 27600 | Biff. | |
| a | 27700 | | ☾ |
| P | 27800 | | |
| N | 27900 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| P | 28000 | Biff. | ☾ |
| N | 28100 | | |
| M | 28200 | | |
| M | 28300 | | ☾ |
| M | 28400 | Biff. | |
| H | 28500 | | |
| H | 28600 | | ☾ |
| G | 28700 | | |
| G | 28800 | Biff. | |
| G | 28900 | | ☾ |
| F | 29000 | | |
| E | 29100 | | |
| E | 29200 | Biff. | |
| E | 29300 | | ☾ ☾ |
| D | 29400 | | |

Page 72 — *Libri Secundi*

Panel A (years 29500–34200)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| C | 29500 | | |
| D | 29600 | Biff. | ☾ |
| C | 29700 | | |
| B | 29800 | | |
| B | 29900 | | ☾ |
| B | 30000 | Biff. | |
| A | 30100 | | |
| A | 30200 | | ☾ |
| u | 30300 | | |
| u | 30400 | Biff. | |
| u | 30500 | | ☾ |
| t | 30600 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| f | 30700 | | |
| t | 30800 | Biff. | ☾ |
| f | 30900 | | |
| r | 31000 | | |
| r | 31100 | | ☾ |
| r | 31200 | Biff. | |
| q | 31300 | | |
| q | 31400 | | ☾ |
| p | 31500 | | |
| p | 31600 | Biff. | |
| † n | 31700 | | |
| n | 31800 | | ☾ ☾ |
| m | 31900 | | |
| m | 32000 | Biff. | |
| m | 32100 | | ☾ |
| l | 32200 | | |
| k | 32300 | | |
| l | 32400 | Biff. | ☾ |
| k | 32582 | | |
| i | 32600 | | |
| i | 32700 | | ☾ |
| i | 32800 | Biff. | |
| h | 32900 | | |
| h | 33000 | | ☾ |
| g | 33100 | | |
| g | 33200 | Biff. | |
| g | 33300 | | ☾ |
| f | 33400 | | |
| e | 33500 | | |
| f | 33600 | Biff. | ☾ |
| e | 33700 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| d | 33800 | | |
| d | 33900 | | ☾ |
| d | 34000 | Biff. | |
| c | 34100 | | |
| b | 34200 | | |

Panel B (years 34300–39000)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| b | 34300 | | ☾ ☾ |
| b | 34400 | Biff. | |
| a | 34500 | | |
| a | 34600 | | ☾ |
| P | 34700 | | |
| P | 34800 | Biff. | |
| P | 34900 | | ☾ |
| N | 35000 | | |
| M | 35100 | | |
| N | 35200 | Biff. | ☾ |
| M | 35300 | | |
| H | 35400 | | |
| H | 35500 | | ☾ |
| H | 35600 | Biff. | |
| G | 35700 | | |
| G | 35800 | | ☾ |
| F | 35900 | | |
| F | 36000 | Biff. | |
| F | 36100 | | ☾ |
| E | 36200 | | |
| D | 36300 | | |
| E | 36400 | Biff. | ☾ |
| D | 36500 | | |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| C | 36600 | | |
| B | 36700 | | |
| C | 36800 | Biff. | ☾ ☾ |
| B | 36900 | | |
| A | 37000 | | |
| A | 37100 | | ☾ |
| A | 37200 | Biff. | |
| u | 37300 | | |
| u | 37400 | | ☾ |
| t | 37500 | | |
| t | 37600 | Biff. | |
| t | 37700 | | ☾ |
| f | 37800 | | |
| r | 37900 | | |
| f | 38000 | Biff. | ☾ |
| r | 38100 | | |
| q | 38200 | | |
| q | 38300 | | ☾ |
| q | 38400 | Biff. | |
| p | 38500 | | |
| p | 38600 | | ☾ |
| n | 38700 | | |
| n | 38800 | Biff. | |
| n | 38900 | | ☾ |
| m | 39000 | | |

Panel C (years 39100–43800)

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| l | 39100 | | |
| l | 39200 | Biff. | |
| l | 39300 | | ☾ ☾ |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| k | 39400 | | |
| i | 39500 | | |
| k | 39600 | Biff. | ☾ |
| i | 39700 | | |
| h | 39800 | | |
| h | 39900 | | ☾ |
| h | 40000 | Biff. | |
| g | 40100 | | |
| g | 40200 | | ☾ |
| f | 40300 | | |
| f | 40400 | Biff. | |
| f | 40500 | | ☾ |
| e | 40600 | | |
| d | 40700 | | |
| e | 40800 | Biff. | ☾ |
| d | 40900 | | |
| c | 41000 | | |
| c | 41100 | | ☾ |
| c | 41200 | Biff. | |
| b | 41300 | | |
| b | 41400 | | ☾ |
| a | 41500 | | |
| a | 41600 | Biff. | |
| † P | 41700 | | |
| P | 41800 | | ☾ ☾ |
| N | 41900 | | |
| N | 42000 | Biff. | |
| N | 42100 | | ☾ |
| M | 42200 | | |
| H | 42300 | | |
| M | 42400 | Biff. | ☾ |

| Index | Anni Domini | Biff. | Æquatio |
|-------|-------------|-------|---------|
| H | 42500 | | |
| G | 42600 | | |
| G | 42700 | | ☾ |
| G | 42800 | Biff. | |
| F | 42900 | | |
| F | 43000 | | ☾ |
| E | 43100 | | |
| E | 43200 | Biff. | |
| E | 43300 | | ☾ |
| D | 43400 | | |
| C | 43500 | | |
| D | 43600 | Biff. | ☾ |
| C | 43700 | | |
| B | 43800 | | |

a whole natural day — on account of which the Moon then necessarily requires an equation — so that the new moons are not shown in the Calendar a whole day later than they should be. At which centennial years the sum of the omitted 12½-year periods accumulates up to 100, so that the equation of the Moon must consequently be deferred into the following century, will become plain from what we shall shortly set out below.

[Margin: Continuation of the table of the equation of the Epacts through the centennial years, up to the year of the correction.]

Having laid this down: since the table of the equation proceeds, as we have said, by centennial years, we shall prefix to the year 500 the same capital letter P, to indicate that the same first line of Epacts is then to be taken up which had been in use in the time of the Council of Nicaea — seeing that around the year of the Lord 500 the Cycle of the golden number had become better suited to the use of the Church than it had been at the very time of the Council of Nicaea, as we explained above. And although in this way we anticipate by 50 years the root of the equation, which we fixed at the year 550, we shall nevertheless take account of those years in their proper place. Then, because after 300 years the Moon anticipates one day in the Calendar, the last line of Epacts must then be taken up — the line containing those Epacts each of which, in the Calendar, precedes by

one day (toward the beginning of the months) each corresponding Epact of the first line. (And each Epact of that first line is greater by one unit than each Epact of this last line, since the former are composed from the latter by the addition of a unit, casting out 30 nonetheless when the sum is greater than 30, and writing the sign * when the sum is 30 — just as the Epacts of any upper line are formed from the Epacts of the line next below it. Of this kind is the lowest line of the expanded table compared with the topmost; for the lowest is the higher of the two. For the expanded table must be understood as a kind of circle containing 30 rows that return upon themselves, so that these letters — capital P and small a, and hence the first line and the lowest — are contiguous.) Since this is so, the small letter a must be assigned to the year 800 in the table of the equation, since this year is the three-hundredth after the year 500. By the same reasoning, since after a further 300 years the Moon anticipates a second day, the small letter b must be assigned to the year 1100 in the table of the equation. And in the same way the small letter b [?] must be prefixed to the year 1400.

[Margin: In what way the equation of the Epacts is established in the year of the correction, 1582.]

[Margin: The letter of the equation of the year of the correction, 1582, which.]

MOREOVER, since in the year 1582 ten days were taken away from the month of October, so that the vernal equinox might be restored to the 21st of March, it follows that after this subtraction all the new moons fell ten days later than the Epact of that year — which before the correction was vj — had indicated in the Calendar. Therefore the line of Epacts had then to be taken up in the expanded table beside which the capital letter D is placed — the line which, of course, holds the tenth place from the line of the small letter c exclusive, descending toward the small letters b and a, and from there toward the capital letters P, N, M, and so on. For all the Epacts of that line which has the capital letter D attached are ten units less than the Epacts of the other line, to which the small letter c is prefixed; since these are composed from those by the addition of 10 units, casting out 30 when the sum is greater than 30, and writing the sign * when the sum is 30. Likewise the Epacts of that line to which the capital letter D is attached are written in the Calendar 10 days below the Epacts of the line to which the small letter c is attached, exclusive. And so in the table of the equation, at the year 1582, after the removal of the 10 days from the month of October, the capital letter D is to be prefixed.

[Margin: In what way the table of the equation of the Epacts is established after the correction, account being taken also of the equation of the solar year.]

BUT since, after the removal of the 10 days, the solar year too must be equated — by omitting three intercalary days in every 400 years, namely one in each of the three earlier centuries, while retaining the intercalary day in the fourth century, as we explained in the previous book — all the centennial years must henceforth be written in the table of the equation, beginning from the year 1600, which is bissextile, and with the word "Bissextile," in this form "Biff.," attached to every fourth year from it, such as are 2000, 2400, 2800, 3200, and so on. For in this way the table of the equation — which after the correction of the year depends on both the year, the lunar and the solar — will be set up more easily. And since from the year 1400, where the lunar equation was last applied in the table of the equation, up to the year 1600 the 300 years have not elapsed, the Moon will not need an equation. Since therefore the solar year too does not then require an equation — the year 1600 being in the usual way bissextile — the same capital letter D must be prefixed to the year 1600 in the table of the equation which was prefixed to the year 1582.

[Margin: The letter of the equation of the year 1600, which.]

But since from the year 1400 up to the year 1700 there have elapsed 300 years, the Moon would then need an equation, if it were true that it anticipates one whole day in 300 years. But since more truly it anticipates one day in $312\frac{1}{2}$ years, and those $12\frac{1}{2}$ years, omitted four times from the year 500 up to the year 1700, make 50 years, and we thereby forestall the lunar equation by that many years (for we ought to have equated the Moon in the year 850, not in the year 800, because from the year 550 — where the root of the equation was placed by us — up to the year 850 there fall 300 years) — years which, together with the earlier 50 years, make up 100 years — the lunar equation is not to be applied in the year 1700, but is to be deferred to the following century, 1800, as was said above. But because in the year 1700 the intercalary day is omitted, on account of the equation of the solar year — namely so that the vernal equinox does not stray further from the 21st of March — the result is that the new moons then fall one day later. For this reason the line of Epacts must then be taken up which has the capital letter C at its head, and whose Epacts are one unit less than the Epacts near the capital letter D, and which for that reason show the new moons one day later in the Calendar. Hence it comes about that in the year 1700 the capital letter C is to be prefixed in the table of the equation.

[Margin: The letter of the equation of the years 1700, which.]

AGAIN, since in the year 1800 the intercalary day is once more omitted, the new moons ought again to fall one day later; but since then, as we have said, the Moon

needs an equation (for into this century the lunar equation was deferred from the year 1700), the result is that the new moons neither ascend nor descend, but remain on the same days. For the day on which the new moons are forced to descend toward the ends of the months, on account of the equation of the solar year, is restored toward the beginnings of the months by the equation of the Moon. On that account the same capital letter C is to be set before the year 1800 in the table of the equation.

[Margin: The letter of the equation of the year 1800, which.]

But in the year 1900, in which again the intercalary day is omitted, the new moons will descend by one day, and therefore to that year the capital letter B is prefixed in the table of the equation. And the same letter is set before the year 2000, because then neither is the intercalary day omitted, nor have 300 years elapsed from the last lunar equation made in the year 1800, so that neither year requires an equation. Likewise, because in the year 2100 both the intercalary day is omitted and the Moon needs an equation — since 300 years have elapsed from the year 1800, in which the last lunar equation was made, up to the year 2100 — the result is that the new moons then neither descend nor ascend in the Calendar, but remain on the same days...

[Margin: The letters of the equation of the years 1900, 2000, 2100, which.]

(as we said above concerning the year 1800). For this reason the same capital letter B is affixed to the year 2100 in the table of the equation. Furthermore, since in the year 2200 the intercalary day is omitted, while the Moon does not need an equation, the new moons will descend by one day, and therefore in the table of the equation the capital letter A is to be assigned to the year 2200; and by the same reasoning the small letter u is to be prefixed to the year 2300.

[Margin: The letter of the equation of the years 2200, 2300, which.]

But because in the following year 2400 — which is the third centennial year after the year 2100, in which the Moon was equated — the Moon requires an equation, while the solar year does not demand one (since that centennial year is bissextile), the new moons will necessarily ascend upward by one day in the Calendar. Therefore the line of Epacts must then again be taken up, to which the capital letter A is prefixed, and accordingly the same capital letter A is to be attached to the year 2400 in the table of the equation. But in the year 2500, on account of the equation of the solar year which then occurs, the new moons are again forced to descend by one day, and therefore to that same year the small letter u must again be affixed, just as in the year 2300.

[Margin: The letter of the equation of the years 2400, 2500, which.]

AND in this way the table of the equation will be continued to infinity, provided account is taken both of the intercalary day — whether omitted or retained — and of the lunar equation which is owed every 300 years; so long as those $12\frac{1}{2}$ years, omitted in each span of 300 years, are not neglected, but as soon as a sum of 100 years has been collected from them, the lunar equation is deferred to the next centennial year, as was done by us in the year 1700, from which we threw the equation forward into the year 1800. This same thing must again be done in the year 4200 — namely 2400 years after the year 1800, into which the lunar equation was deferred on account of those 100 years which had grown out of the omission of the $12\frac{1}{2}$ years. For the lunar equation which ought to be made in the year 4200, on account of the 300 years elapsed from the last equation, must be made in the following centennial year, 4300. And in the same way, after another 2400 years, the lunar equation must be thrown forward into the next centennial year, and so on.

[Margin: Continuation of the table of the equation of the Epacts after the correction, through the centennial years, to infinity.]

FROM all these things a threefold rule can be drawn for extending the table of the equation to any number of years, which is as follows.

[Margin: A threefold rule for continuing the table of the equation of the Epacts to infinity.]

1. WHEN in some centennial year the intercalary day is omitted and the Moon does not need an equation — that is, when the solar year alone needs an equation — one must descend in the expanded table to the next lower line of Epacts, and its letter must be attached to that centennial year.
2. WHEN, however, in some centennial year the intercalary day is not omitted, but the Moon needs an equation — that is, when the lunar year alone needs an equation — one must ascend in the expanded table to the next higher line of Epacts, and its letter must be assigned to that centennial year.
3. WHEN, finally, in some centennial year the intercalary day is omitted and the Moon needs an equation; or when neither is the intercalary day omitted nor does the Moon need an equation — that is, when both years, or neither, are to be equated — one must remain on the same line of Epacts of

the expanded table, and the same letter must be prefixed to that centennial year which was attached to the preceding centennial year.

ALL these things you see observed in the table of the equation. For to every centennial year that letter is always prefixed which represents the line of Epacts in the expanded table that must then be taken up — according as one must descend, or ascend, or remain on the same line, as these very rules teach. Furthermore, to make the reckoning of the equation easier, we have added this sign,), to those centennial years in which the Moon calls for an equation: single indeed for every third centennial year, but double for every fourth centennial year, into which the equation is deferred from the preceding three-hundredth year; which happens, as we have said, 2400 years after the year 1800, in which such a deferral of the equation was first made. For then the equation is deferred into the year 4300 from the year 4200, although the year 4200 is the third centennial year from the last lunar equation made in the year 3900. The same thing must be done 2400 years after the year 4300 — that is, from the year 6700, from which the equation is deferred into the year 6800. Likewise 2400 years after the year 6800, that is, in the year 9200. For then the equation must be applied not in the year 9200, but in 9300; and so with the rest.

[Margin: By what device the perpetual table of the cycle of the Epacts in the Gregorian Calendar has been constructed, together with the table of the equation.]

BY exactly the same artifice has the table of the equation of the perpetual Cycle of Epacts in the Gregorian Calendar been constructed, since it does not differ from this one. The perpetual table of the Cycle of Epacts in the same Calendar takes its beginning from the Epact *, and proceeds through all 30 Epacts, each of which is composed by the addition of 11 to the immediately preceding Epact, casting out 30 from the sum when they can be discarded. Then, above each Epact of that same table, is written the letter of the alphabet which in the expanded table is set down near that same Epact beneath the golden number 3. Finally, the Epact xxv. 25. is doubled beneath the capital letter F, and marked with different characters or colours — the one in red, the other in black — for the reason set out above. All of which will be clear to anyone who diligently compares that perpetual table of the Cycle of Epacts, which we have here repeated, with the expanded table of Epacts.

TABELLA CYCLI EPACTARVM PERPETVA

Perpetual Table of the Cycle of Epacts.

The table pairs each index letter (upper cell) with its Epact (lower cell), set in three horizontal bands across the page. The index letters run through the 30-letter cycle, turning from the small letters back to capital P; the Epacts advance by 11 (casting out 30). Epact 30 is shown as the asterisk *; Epact 25 is doubled as xxv. 25. (Roman and Arabic) beneath F. Terminal-sort forms (i- vs j-terminal) are transcribed as printed.

Band 1:

| Index letter | P | l | C | c | p | F | f | f | M | i | A |
|--------------|---|---|------|------|--------|----------|---|------|---------|---|---|
| Epact | * | x | xxij | iiij | xiiiij | xxv. 25. | v | xvii | xxviiij | i | x |
| | | j | | | | | j | | | x | x |

Band 2:

| Index letter | a | m | D | d | q | G | g | t | N | k | B |
|--------------|---|-----|-----------|-------|---|------|-----|--------|------|---|----|
| Epact | j | xij | xiiij [?] | iiiij | x | xxvj | vij | xviiij | xxix | x | xx |
| | | | | | v | | | | | | j |

Band 3:

| Index letter | b | n | E | e | r | H | h | u |
|--------------|----|-------|---------|---|-----|-------|------|-----|
| Epact | ij | xiiij | xxiiiij | v | xvj | xxvii | viii | xix |

We preferred, however, to write the index letters of the expanded table in this table above those Epacts which in the expanded table are placed near the same Epacts beneath the golden number 3, rather than above those which correspond to the same letters beneath the golden number 1 — so that it might be more easily understood that this table has been drawn from the expanded table. Nor was there any other reason for this arrangement.

Although the letters of the alphabet in the table of the equation seem to preserve no order, they nevertheless return upon themselves in the manner of a cycle over a span of 300000 years, so that the table of the equation of the Epacts, extended through 300000 years — beginning from the year 1700, where for the first time the capital letter C is used in place of the capital letter D — will be perpetual, if the world were to endure forever and the method of equating both years, solar and lunar, prescribed by us, should never need correction. This we shall make clear as follows. After 10000 years — that is, after 100 centennial years elapsed from the year 1700 — namely in the year 11700, exactly the same variety of letters returns, though not the same Epacts. For just as after the year 1600 the

same letter C is attached to the two years 1700 and 1800; the same letter B to the three years 1900, 2000, 2100; the letter A to the year 2200; the letter u to the year 2300; while in the year 2400 the letter A is repeated, and in the year 2500 the letter u; and the same letter t is assigned to the three years 2600, 2700, 2800, and so on — so exactly it comes about after 10000 years have elapsed. For after the year 11600, to the two years 11700 and 11800 the same letter i is assigned; to the three years 11900, 12000, 12100 the same letter h; to the year 12200 the letter g; to the year 12300 the letter f; in the year 12400 the letter g is repeated; in the year 12500 the letter f; and to the three years 12600, 12700, 12800 the same letter e is prefixed, and so on. Exactly the same is observed after 10000 years elapsed from the year 11700; for in the year 21700 the same variety returns. Likewise in the year 31700 — that is, 10000 years after the year 21700 elapsed. Likewise in the year 41700 — that is, after 10000 years likewise elapsed from the year 31700. And the reckoning is the same for the rest. This appears in the years set out below, excerpted from the equation table above; although the same holds true also in every span of 10000 years, from whatever centennial year one begins. Moreover, in the table of the equation, to the years at which the orders of 10000 years begin, we have prefixed this sign, +.

Table of the equation of the expanded table of Epacts (excerpt, showing the year-orders 1700, 11700, 21700, 31700, 41700). Each panel pairs an index letter with its year (Anni Domini). The rightmost panel additionally carries the bissextile marks and the lunar-equation sign (crescent). **The only header text actually printed on the page is Anni Dñi, over the year column of each panel; the header cell above every index-letter column, and above the bissextile and equation columns, is blank.** The bracketed [Litera], [Biff.] and [Equation] heads below are therefore editorial labels supplied for legibility, not transcription.

| [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Biff.
] | [Equa
tion] |
|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|----------------|
| C | 1700 | i | 1170
0 | G | 2170
0 | n | 3170
0 | P | 4170
0 | | |
| C | 1800 | i | 1180
0 | G | 2180
0 | n | 3180
0 | P | 4180
0 | | ((|
| B | 1900 | h | 1190
0 | F | 2190
0 | m | 3190
0 | N | 4190
0 | | |
| B | 2000 | h | 1200
0 | F | 2200
0 | m | 2200
0 | N | 4200
0 | Biff. | |

| [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Lit
era] | Anni
Dñi | [Biff.
] | [Equa
tion] |
|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|----------------|
| B | 2100 | h | 1210
0 | F | 2210
0 | m | 3210
0 | N | 4210
0 | | (|
| A | 2200 | g | 1220
0 | E | 2220
0 | l | 3220
0 | M | 4220
0 | | |
| u | 2300 | f | 1230
0 | D | 2230
0 | k | 3230
0 | H | 4230
0 | | |
| A | 2400 | g | 1240
0 | E | 2240
0 | l | 3240
0 | M | 4240
0 | Biff. | (|
| u | 2500 | f | 1250
0 | D | 2250
0 | k | 3250
0 | H | 4250
0 | | |
| t | 2600 | e | 1260
0 | C | 2260
0 | i | 3260
0 | G | 4260
0 | | |
| t | 2700 | e | 1270
0 | C | 2270
0 | i | 3270
0 | G | 4270
0 | | (|
| t | 2800 | e | 1280
0 | C | 2280
0 | i | 3280
0 | G | 4280
0 | Biff. | |

The reason for this is that in 10000 years there are contained 25 centuries, into which the lunar equation owed to the preceding centennial year is thrown forward, four times exactly; and therefore the lunar equations proceed in one span of 10000 years just as in any other. Since therefore the bissextile centennial years too behave in the same way in all spans of this kind — which is evident in the table set beside [the text], in which we have added the marks both of the lunar equation and of the bissextile years, excerpted from the same equation table above — it is necessary that the letters of the equation proceed in the same proportion in every span of 10000 years.

[Margin: The letter of the equation of the Epacts, after the year 10000, proceeds in altogether the same proportion; and why.]

THEREFORE the whole labour lies in constructing the table of the equation in the first span of 10000 years. For if, from the year 11700 — that is, after 10000 years elapsed from the year 1700 — the same order of letters is kept (the beginning, however, being made from the letter i), together with the marks of the lunar equation and of the bissextile centennial years which was kept from the year 1700 up to the year 11600 inclusive, and if the same is done after further and further intervals of 10000 years, until 300000 years after the year 1700 are

completed, then the whole table of the equation will have been constructed, embracing all the varieties.

[Margin: The whole labour of constructing the table of the equation of the Epacts is contained in the cycle of 10000 years; and why.]

BUT that after 300000 years not only is the same variety of the letters of the equation preserved, but the very same letters, in number, altogether return in a cycle, will become plain from this: that after 10000 years elapsed from the year 1700...

there occurs a mutation of 43 letters — that is (once the entire cycle of 30 letters of the expanded table has been cast out) of 13 letters — beginning from the letter C (majuscule) prefixed to the year 1700 and running up to and including the letter k (minuscule) set against the year 11600. In the second span of 10000 years there will occur a mutation of 26 letters, from the same letter C (majuscule) — that is, of another 13 letters, counting from the letter i. In the third span [the mutation is] 39, that is (casting out 30) 9; in the fourth, 22; in the fifth, 35, that is (casting out 30) 5; in the sixth, 18; in the seventh, 31, that is (casting out 30) 1; in the eighth, 14; in the ninth, 27; in the tenth, 40, that is (casting out 30) 10; in the eleventh, 23; in the twelfth, 36, or 6; in the thirteenth, 19; in the fourteenth, 32, or 2; in the fifteenth, 15; in the sixteenth, 28; in the seventeenth, 41, or 11; in the eighteenth, 24; in the nineteenth, 37, or 7; in the twentieth, 20; in the twenty-first, 33, or 3; in the twenty-second, 16; in the twenty-third, 29; in the twenty-fourth, 42, or 12; in the twenty-fifth, 25; in the twenty-sixth, 38, or 8; in the twenty-seventh, 21; in the twenty-eighth, 34, or 4; in the twenty-ninth, 17; and in the thirtieth, 30. For — I say — in each span of 10000 [years] there is a mutation of the letters, so that in the thirtieth span there is effected a mutation of all 30 letters of the expanded table — that is, once 300000 years have elapsed, the very same letters return in exactly the same order. The equation table of the epacts is therefore contained within a cycle of 300000 years: something that may well seem downright incredible to not a few.

[Margin: The use of the expanded table and of the equation of the epacts.]

The use of both tables — the expanded one and the equation — consists in this: that we may learn which of the 19 epacts correspond to the 19 golden numbers at any given time, and thus, once the golden number of any year is known, which epact answering to it in the expanded table is to be taken for tracing the new moons in the Calendar. This is done as follows. The proposed year is sought in the equation table, if it is one of the centennial years; but if it is not one of the

centennials, take the centennial year next below the proposed year, or else the year 1582 if the given year falls after the correction and before the year 1600. Then carefully note the letter prefixed to that centennial. For the line of epacts that has this same letter prefixed to it in the expanded table is to be used not only for the proposed year but for all the other years from that centennial up to the centennial year that has a different letter affixed to it. Therefore, if you take the epact that in that line answers to the golden number of the year in question, set at the head of the table, it will indicate all the new moons of that year in the Calendar.

For example. Given the year 1593, one must take in the equation table the year 1582, since it is the next below, together with the letter D (majuscule). Then in the expanded table one must take the line of epacts to which the same letter D (majuscule) is prefixed. For this line will be in use from the year 1582 after the correction up to (but excluding) the year 1700, which already has a different letter prefixed. And since in the year 1593 the golden number is 17, to which, in the assumed line of epacts of the letter D (majuscule), the epact xxvii answers, this epact will be employed in that very year 1593; and the new moons will fall in that year on the days to which the epact xxvii is prefixed in the Calendar.

Again, given the year 1916, one must take in the equation table the year 1900, together with the letter B (majuscule); and in the expanded table the line of epacts is to be taken that has the same letter B prefixed. For this line will be in use from the year 1900 up to (but excluding) the year 2200, to which a different letter is prefixed. And since the golden number of the year 1916 is 17, to which, in the adopted line of epacts of the letter B (majuscule), the epact 25 answers — marked with a different character from the others — this epact will indicate the new moons of that whole year in the Calendar.

[Margin: The use of the little table of the perpetual cycle of epacts, which is set forth in the Calendar.]

Finally — to give an example from before the correction of the year as well — if the year 415 is proposed, one must take in the equation table the year 320, as the one next below it, together with the letter P (majuscule); and in the expanded table the line of epacts to which this same letter P (majuscule) is assigned. This is the line then to be used. Since, then, in the year 415 the golden number was 17, to which in that line of epacts the epact iiij answers, all the new moons fell in that year on the days to which the epact iiij is assigned. And the same procedure holds in all other cases.

In the same way the epact may be found from the little table of the perpetual cycle of epacts, as explained in the Gregorian Calendar. For if from the equation table one takes the letter matching the proposed date, and finds the like letter in the perpetual table, the epact of that letter will answer to golden number 3, the next epact to golden number 4, and so on up to golden number 19, going back from the last epact, xix, to the first (*), if need be. For this little table is like a kind of circle, as we said of the expanded table. The epact preceding the letter taken in the perpetual table will answer to golden number 2, and the one before that to golden number 1, as was set forth in the Calendar, Canon 2, where you will find many examples of this matter. For example. In the year 3239 the letter r (minuscule) answers in the equation table, and the golden number is 10. So if to the letter r (minuscule) in the little table of the perpetual cycle you assign golden number 3, to the next 4, to the one next after that 5, and so on, returning to the beginning of the table, the golden number 10 of the proposed year will fall into the fourth cell of the letter c (minuscule), where the epact iiij is placed — the epact due to the proposed year. In the year 3211, however, to which the same letter r (minuscule) answers, the golden number is 1. So by assigning golden number 3 to the cell of that same letter r (minuscule), golden number 2 to the preceding cell, and 1 (printed j) to the cell of the letter E (majuscule), you will find there the epact xxiiij, which is to be used in the year 3211 for investigating the new moons. And so with the rest.

Now the reason why the epact of the following year is formed by adding 12 — rather than 11 — to the epact of that year in which the golden number is 19 is this. Out of the 209 days that are made up in 19 solar years, from the 11 days by which each solar year exceeds each lunar year, seven embolismic lunations are constituted, six indeed of 30 days but one of 29, as we said in Chapter 1 of this book. Hence one ought not always to cast out 30 from the sum gathered by adding 11 to the preceding epact when that sum is greater than 30; and accordingly, when the year in question is a lunar embolismic year containing 13 lunations — as will be understood from the next chapter — but in the seventh and last embolism, whose lunation embraces only 29 days, only 29 ought to be subtracted. Since, then, the customary rule always casts out 30, so that all the embolisms may be alike, it is necessary after the last embolism to add 12 to the epact in order to produce the epact of the following year: namely, so that the one unit taken from the preceding epact may be restored to the following one.

[Margin: Why 12 is added to the epact concurrent with golden number 19, in order to make the epact of the following year.]

For if only 29 had been taken from the earlier epact, as would be fitting, it would be enough to add 11 to obtain the epact of the following year, as is done in the other cases. For in that way there would be produced the very same epact, by number, that was in use 19 years earlier, and the new moons would return to the same days, as the reckoning of the nineteen-year cycle requires — just as happens when 12 is added to the last epact once 30 have been taken away in the last embolism. Now although the year in which the golden number is 19 was not, before the correction of the Calendar, the seventh or last embolismic year, but the penultimate, or sixth, as we showed in the preceding chapter — nevertheless, because that year was always embolismic, and the number 19 is the greatest and last of all the golden numbers, it pleased the computists to make the addition of the number 12 at the time when golden number 19 is in use. For no notable error in the lunations can arise from this. For the same reason we too have chosen to make that addition when the golden number is 19, whatever epact then answers to it, so that we may follow the footsteps of the ancients as far as can be done — even though that year is not always the last embolismic year, nor indeed always embolismic. But these matters will be perceived more plainly and clearly in the next chapter.

[Margin: Why, when golden number 9 is running, a unit must be added to the days that remain over in December after the last lunation, so that the epact of the following year may be established.]

Hence is clear the reason why, when golden number 19 is in use, a unit is added to the days that remain over after the last lunation of December, in order to form the epact of the following year — as was stated at the end of the preceding chapter. It is because 12 must be applied to the epact running with golden number 19, whereas only 11 is added to the others, to produce the epact of the following year, as we have just shown. For if a unit were not then added, those surplus days would present an epact one unit smaller — namely the one that would be produced by adding 11 to the earlier epact, as is done in the other cases — and not the one that is generated by adding 12; which is absurd. Yet these two epacts, xviii and xix, are excepted: for if they are in use together with golden number 19, a unit is not to be added to those surplus days; rather the surplus days themselves exhibit the epact of the following year. This is because at that time one day is taken from the lunations of these two epacts in December, so that they comprise only 29 days, whereas otherwise they always comprise 30. The result is that the lunation of each of these two epacts then ends in December one day earlier than it should, and consequently a day is left over at the end of December which otherwise would have to be added to the other surplus days. But

why, when golden number 19 is running with those two epacts, their lunations in the month of December contain only 29 days, we shall explain in the next chapter, where the embolisms will be treated.

[Margin: By what method the equation table of the epacts is to be renewed, should another magnitude of the year be found.]

Now if, after some centuries have elapsed, a magnitude of the year is discovered by astronomy different from the one we now follow — such that the Alphonsine year is no longer a mean between the greatest and the least year, and consequently the omission of three intercalary days in every span of 400 years forces the vernal equinox to recede further from 21 March, so that it cannot return to it — then the equinox will have to be restored to 21 March by intercalating, or omitting, out of the ordinary course, as many days in some year as the number by which it has departed from the 21st, whether toward the end of the month or toward its beginning, as we taught in Chapter 5 of the earlier book. And once the equinox has been restored in this way, our equation of the solar year — which orders three intercalary days to be omitted in every span of 400 years — must be resumed, or another more convenient one instituted, according to the known magnitude of the solar year to be found. Then the equation table must be renewed in this manner. If, in order to bring the equinox back to 21 March, several days have been intercalated, one must ascend in the expanded table from the line of epacts then in use by as many lines as there were intercalary days interpolated, so that the line be used whose epacts are greater, by as many units, than the epacts of the other line that was employed before that extraordinary intercalation — greater by as many days as were intercalated; for the new moons will accordingly occur just so many days earlier than before, on account of those adventitious days added to the year out of course. But if, in order to restore the equinox to 21 March, several days have been taken out of the year, one must descend in the expanded table by as many lines from the line of epacts then in use as there were days removed from the year, so that for investigating the new moons the line be adopted whose epacts are smaller, by as many units, than the epacts of the other line that was in use before this removal of days — smaller by as many days as were removed; for the new moons will accordingly occur just so many days later than before, on account of those days taken out of the year out of course. The letter afterward assigned to this line of epacts — the line up to which the ascent or descent was made — is to be prefixed in the equation table to that year in which the extraordinary intercalation or removal of days was made. Finally, beyond that year the equation table must be continued according to the precepts handed down earlier, beginning from the centennial

year that will be nearest to the year in which the equinox was restored (if that year is not itself a centennial): so that when the solar year needs equating, but not the lunar, a descent is made in the expanded table to the next lower line; when the lunar year, however, requires equating, but not the solar, an ascent is made to the next higher line; and when finally neither year, or both, is to be equated, one remains on the same line of epacts — as was said above in that threefold rule.

[Margin: By what method the equation table of the epacts is to be renewed, should the Moon perhaps be found to advance by one day not in $312\frac{1}{2}$ years, but in fewer or more.]

And if some defect should be detected in the table in the equation of the Moon — such that the Moon advances its seat forward by one day in the Calendar not in $312\frac{1}{2}$ years, but in fewer or more — the method of the Moon's equation in the table can easily be changed, by carefully observing when the years omitted at the centennials make up a sum of 100 years, so that the equation of the Moon is then deferred to the next centennial.

[Margin: That the epacts do not change their places in the Calendar, even if the equation table of the epacts is renewed on account of some other magnitude of the year perhaps found, or on account of some other period of the lunations.]

Even though, after the lapse of some centuries, the equation table must of necessity be corrected in the way we have described — by the authority of the Roman Pontiff, through skilled astronomers — nevertheless no change on that account will have to be made in the Calendar itself. Rather the disposition of the epacts, which we described above, will remain wholly intact and unimpaired. For since the epacts are so distributed among the days of the year that no day is left empty, it comes about that, whether the new moons descend or ascend in the Calendar, other epacts — always answering to the same golden numbers — can be assumed for tracing them, as the equation table shall direct, without any change of the epacts in the Calendar. And this can suit neither the golden number nor any other cycle which, disposed in the Calendar, does not fill all its places. For if the new moons must, on account of the equation, ascend or descend, then in those places of the Calendar that are empty and destitute of the numbers of the cycle we shall of necessity lack the index numbers of the new moons — unless the cycle be disposed otherwise, namely so that the number indexing the new moons then falls into those empty places to which the new moons have slipped. In which case 30 Calendars would have to be made — as many, that is, as there are days by

which the new moons can ascend and descend — the 30 Calendars which we described at length in the exposition of the Gregorian Calendar.

[Margin: Why the golden number, or any other cycle that does not fill all the places of the Calendar, cannot be immutable in the Calendar.]

But if someone should say that it is not necessary for the cycle to be arranged otherwise in the Calendar, and that it is enough to take the number nearest to those empty places for tracing the new moons — since indeed no notable error can be committed in this, seeing that the cycle cannot show the new moons exactly and precisely, however it is placed in the Calendar, but must indicate them now earlier, now later — if, I say, someone should speak thus, who does not see that the new moons cannot in this way ascend or descend by [the required] days as often as the equation table prescribes? Who, too, does not observe that a different number of the cycle then indicates the new moons than the one which the customary rule for finding the golden number — or the number of some other cycle — exhibits, and that consequently, at every time the new moons change, new canons for finding that number would have to be composed? And how much disturbance this would bring to affairs both ecclesiastical and political, no one fails to see.

[Margin: Why the Gregorian Calendar is called perpetual; by what method the cycle of epacts of the new Calendar is said to be adaptable to any magnitude of the year.]

Now it is on account of this stability alone of the cycle of epacts in the Calendar — namely, that nothing in it need be changed even if another magnitude of the year, or another period of the Moon, be found, and the equation table must accordingly be altered — that we have called this Gregorian Calendar Perpetual and everlasting, and never liable to any change; and rightly so, indeed, since in it the cycle of epacts fills all the places and, directed to the customary golden number, is accommodated to any magnitude of the solar year, and also of the lunar year, provided only the equation table is constructed as we have just explained.

[Margin: That the new Calendar is not called perpetual on account of the restitution of the equinox effected and its equation prescribed.]

Nor did it ever enter the mind of any of us who were summoned by the Supreme Pontiff to this task of correction, to suppose that the Calendar is perpetual on account of the restitution of the equinox and the equation of the solar year prescribed in it — as Maestlin wrongly and insolently objects. For since it has been observed by the more expert astronomers that the year is now greater, now

smaller, and its magnitude has not yet been surely ascertained — as the great variety of the tables testifies — who would be so shameless and rash as to dare to affirm and accept that the equinox will remain perpetually in the seat to which it is recalled, even if the equation of the solar year be instituted with every precaution? And that we certainly did not assert this, that most abundant witness testifies — the little book of the Compendium concerning the restoration of the Calendar, sent to the Christian princes, in which a twofold ratio of equating the solar year was proposed, one from the Alphonsine [tables], the other from Copernicus: which we should certainly never have done had we judged our equation, instituted according to the opinion of the Alphonsines, to be so certain that it could never be liable to any change.

[Margin: Why a twofold method of equating the solar year was proposed in the Compendium sent to the Christian princes.]

The same is testified most plainly by these words, nearly the last of that Compendium: "The vernal equinox, therefore, having been restored to the place from which it had fallen — or rather, since, once the cycle of epacts (which can be accommodated to any magnitude of the year) has been set in the Calendar, and the manner of intercalation which we have described, together with the equation of that cycle, has been applied — the years and months will hereafter agree with the reckoning of the Sun and of the Moon; and [if] much variety or disagreement should thereafter arise — should this ever happen — they can most beautifully be restored to their state by this same means. But if to anyone the Alphonsine computations seem too uncertain to be trusted, and he thinks the more recent ones rather to be adhered to, he will assuredly understand that the disposition and arrangement of this ingenious cycle, and of the table of epacts devised by Lilius, is such that it can without any trouble be fitted to the computations of Copernicus, or of anyone else, if a table of the equation drawn from them be substituted for the one we have written in the margin." See how clearly and openly we profess that our equation of the solar year is not so firm and settled that, should restoration at any time be needed, it cannot want it.

[Margin: How easy the restitution of the equinox is, by the omission or intercalation of some days.]

And indeed, as far as the equinox is concerned, it can easily be recalled to its former seat, whenever it shall have deserted it, by the omission or intercalation of some days, by edict of the Supreme Pontiff — as in this very correction of the year it was done by the removal of ten days.

But to arrange in the Calendar a cycle for showing the new moons that could be accommodated to every magnitude of the year and be perpetual — so that nothing should ever have to be changed in its disposition in the Calendar — this always seemed to the ancient Fathers and to astronomers exceedingly difficult, not to say impossible; because, since the Sun requires fewer days than the Moon in order to advance its seat by a whole day in the Calendar, it did not seem possible that one and the same cycle inscribed in the Calendar should show the new moons over a long time. For when, for the equation of the Sun, one day is removed from the year, the new moons must necessarily descend by a day in the Calendar, since the Moon does not yet need equating, as we said above. Unless, then, the cycle is disposed otherwise in the Calendar, it can in no way come about that the same number of the cycle as before indicates the new moons. By the same reasoning, when the Moon requires equating but not the Sun, the new moons will necessarily ascend by a day in the Calendar. Therefore neither then will the same number of the cycle as before rightly show the new moons, unless it be moved upward into those places to which the new moons have advanced. But if someone should [tali...]

that a single day had to be removed from the year, in such a matter and at such a time, so that the new moons might be kept on the same dates, would thereby drive the equinox out of its own proper seat and force it to slide toward the end of the month. And so, if one applies an equation to the solar year, he will incur no small loss of the new moons; whereas if he sets out to equalize the lunar year, he will necessarily throw the equinox out of its proper place. So that the common saying fits his case exactly:

He falls into Scylla, wishing to avoid Charybdis.

But if the equinox and the new moons were both to advance by one day, over the same interval of time, toward the beginnings of the months in the Calendar, this whole difficulty would be entirely removed. Since this is so, it must be reckoned no small achievement in the correction of the Calendar that the discordant motions of the Sun and Moon have been brought into such a concord that the equation of the one does not obstruct the equation of the other, whatever that may be. Hence the Calendar may fairly be called perpetual, even though the equinox, over and above the prescribed equation, occasionally needs some further remedy to keep it from straying too far from the 21st. The greatest thanks and praise, therefore, are owed to Aloysius Lilius [Luigi Lilio], who devised so ingenious a Cycle of Epacts, one that, inscribed in the Calendar, points out the

new moons perpetually and can so easily be accommodated to any length of the year.

[Margin: The new Calendar I judge worthy of praise, in that in it the discordant motions of the Sun and Moon are brought into concord, even though the equinox, on account of the unevenness of the solar year, sometimes needs another equation besides the one applied every 400 years.]

And if anyone thinks that this perpetual method of ours for finding the new moons from the Epacts — the one set out by means of the expanded table, once the equation has been applied at its proper time — is foreign to the customary form, which investigates the new moons by means of the golden numbers written in the Calendar, let him consult the thirty nineteen-year Cycles of golden numbers that we drew out of the Cycle of thirty Epacts in our Exposition of the Gregorian Calendar, in which the whole reckoning of the lunar year according to the practice of the Church consists — so that they are, as it were, the equivalent of the 30 Calendars that we said would have to be drawn up, if the golden numbers were to be retained in the Calendar. From these he will plainly understand that the method of finding the new moons by the Epacts and the method by the golden numbers arranged in 30 Calendars are entirely one and the same, and that the one agrees with the other in every respect. But since the multitude of 30 Calendars is inconvenient — both because from them confusion could easily arise in various regions, one region using this Calendar and another that one at the same time, and because, in order to construct the Paschal tables from them and to announce correctly the age of the Moon in the Martyrology, 30 Paschal tables and 30 Martyrologies would have to be made — it is safer and more consonant with the affairs of the Church, both in the Calendar and in the Paschal tables and the Martyrology, to use the numbers of the Epacts, since a single row of Epacts distributed through the Calendar accomplishes all of this most conveniently, as is evident from the new Calendar and from the Martyrology adapted to the restoration of the year.

[Margin: The method of finding the new moons from the Epacts is no different from the one carried out by means of the golden numbers.]

In that same Exposition of the Gregorian Calendar we also described another thirty tables of lunations, corresponding in order to the thirty Cycles of Epacts of the expanded table, or to the thirty Calendars of golden numbers. From these too it is manifest how aptly and fittingly both the Epacts in the new Calendar and the golden numbers drawn out of the Epacts in the 30 Calendars have been positioned for indicating the new moons, and how distinctly and orderly the

lunations advance through the Calendar in alternations of 30 and 29 days. Let the kind Reader consult both sets of tables there; for we did not think it worth the trouble to repeat them here, since they are rather long.

ON THE EMBOLISMS, AND THE LEAP (AS THEY CALL IT) OF THE MOON. CHAPTER V.

Now that we have inscribed all 30 Epacts in the Calendar, and have set up their expanded table together with the equation table, so that for any century it may be known which 19 of the 30 Epacts are to be taken up — the ones corresponding to the nineteen golden numbers and demonstrating the new moons — it will not be out of place to discuss here also a few things about the embolisms and the leap of the Moon. For from this it will become clearer that the Epacts have been rightly positioned in the Calendar, and that their Cycle performs exactly the same as the Cycle of the golden number, or as any other Cycle formerly performed. But two things must first be explained. First, that any lunation is assigned by the Computists to the month in which it ends, even though it may have had its beginning in another month. On this matter there is this little verse:

[Margin: Why a lunation is assigned to the month in which it ends.]

Let the lunation be given to the month in which it is completed.

If, however, anyone should want the reason for this, the following may be offered. When the Epact * is current, there is no doubt that the first lunation of the whole year begins on the very Kalends of January, together with the year itself, and is to be assigned to January, ending on the 30th of January. Therefore the second lunation, whose end falls on the last day of February, will have to be assigned to February, even though its beginning falls at the end [è vltimo] of January. The third, beginning on the Kalends of March and ending on the 30th, must be given to March. The fourth then to April, whose end falls on the 28th day of April, even though its beginning occurs on the last day of March. The fifth to May, which ends on the 28th day of May, although it begins on the 29th of April. And so, throughout that whole year, the lunations will have to be assigned to the months in which they end, even though they begin in others: so that the twelfth lunation, whose end falls on the 20th day of December, is to be assigned to December, even though it begins on the 22nd of November. And since in a common lunar year only 12 lunations are contained, the following lunation — beginning on the 21st of December and ending on the 19th of January — will have to be called the first of the following year, and consequently assigned to January, the first month of the year; since on the 20th of December the

common lunar year of 12 lunations is now finished. From which it follows that the ensuing lunation, which begins on the 20th of January, must be assigned to February, in whose 17th day it ends; and that likewise the other lunations of the same year must be granted to the months in which they end, even though they take their beginning from others. In just the same way, in an embolismic lunar year, the last, that is the thirteenth, lunation will have its end in December; and the one next following — whether it begins on some day of December, or at the start of January — will have to be called the first of the following year. This appears to be altogether the reason why all the Computists assign lunations to the months in which they terminate: namely so that the first lunation of the year, having its end [in Januarie] would be ascribed to the first solar month of the whole year [?], reason itself so demanding.

In the second place, it must be declared from which Epact any nineteen-year Cycle takes its beginning — that Cycle, namely, in which are contained the 19 Epacts of some one row out of those 30 described in the expanded table, corresponding to the nineteen golden numbers. For those thirty Cycles of the expanded table do not begin from those Epacts which hold the first place in them and are set under golden number 3, as someone considering the matter not attentively enough might perhaps suppose; rather, every nineteen-year Cycle of the expanded table begins from the Epact * — and from the first day of January — if * is contained in that Cycle; or else from Epact 1, if * is not found in the given Cycle.

[Margin: That the 19-year Cycle of Epacts begins either from *, if * is contained in the cycle in question, or from 1, if * is not found in the given cycle.]

Now the Epact * is contained in Cycles 1, 2, 4, 5, 7, 9, 10, 12, 13, 15, 16, 18, 20, 21, 23, 24, 26, 27, and 29; and therefore each of these Cycles takes its beginning from it, under whatever golden number it may be positioned. But in the other 11 Cycles — namely in 3, 6, 8, 11, 14, 17, 19, 22, 25, 28, and 30 — the * is not found. Therefore these Cycles take their beginning from Epact 1, under whatever golden number it may be found positioned.

[Margin: Which of the nineteen-year Cycles of the expanded table begin from *, and which from Epact 1.]

For although in every Cycle one is free to take the beginning wherever one pleases, nevertheless, because 19 lunar years are made equal to just as many solar years — though not in every respect, as was said above — it is fitting that the beginning of the 19-year Cycle in the Epacts be taken there where the custom

of the Church places the beginning of the solar year in the Calendar, namely on the Kalends of January, or at least near the Kalends. So that, whenever in a nineteen-year Cycle the Epact * inscribed at the Kalends of January is in use, the beginning of the Cycle is taken from it, and that new moon falling on the first of January is the first in that whole nineteen-year Cycle. But since it not rarely happens that in the whole span of 19 years no new moon falls on the Kalends of January — because throughout that whole time the Epact * is not in use, as is manifest from the eleven higher Cycles of the expanded table, namely from 3, 6, 8, 11, 14, 17, 19, 22, 25, 28, and 30 — the beginning of our Cycle cannot then be taken from the Kalends of January, nor from the Epact *, since it is not contained in that Cycle. Rather, the Cycle will have to be begun from that Epact which is nearest to the Kalends of January: either from Epact xxix, set before the second day of January, or from that Epact which would have to be inscribed at the last day of December, if the year began from there. So that the new moon nearest to the beginning of the solar year — such as the one that falls either on the second day of January or on the last day of December — is called the first in that whole Cycle. But since the new moon falling on the second day of January is not the first of the whole year, but the second — for the preceding lunation, which has its end on the very Kalends of January, is assigned to January and called the first of the whole year, as we wrote a little earlier — the new moon falling on the last day of December must be taken instead. For this one is then the first of the whole year, and is assigned to January, and is nearest to the beginning of the solar year in that whole nineteen-year Cycle; since all the other new moons assigned to January in that Cycle fall on other days of December that precede the last.

[Margin: That each nineteen-year Cycle begins either from the first day of January or from the last day of December. That the nineteen-year Cycle of the golden number begins either from the golden number written at the Kalends of January, or from the one that would have to be ascribed to the last day of December, if the solar year began from there.]

There are, therefore, two days to be assigned to the beginning of our Cycle: namely, the Kalends of January, where the Epact * is placed, and the day before the Kalends of January, where Epact 1 would have to be positioned, if the solar year began there — just as in other places of the Calendar Epact 1 is positioned next above Epact *. But since the solar year begins from the first day of January and ends on the last of December, and the Epacts in the Calendar — by reason of [their arrangement] — [Epact 1] set before the last day of December precedes Epact *, and Epact xx, which by natural order falls below E[pact 1], is still in use in the month of December, in those years [in which] the Epacts change in the

month of January [?], just as our Epacts too change in the month of December; so that the beginning of any nineteen-year Cycle of our Epacts is in use either from Epact *, when that is contained in the nineteen-year Cycle, or from Epact 1, when * is not found in it.

From this it is gathered that the beginning of any nineteen-year Cycle of ours is either from the first day of January and from Epact *, when that is in use in the nineteen-year Cycle, or from the last day of December and from Epact 1, when * is not found in that Cycle.

And this is the reason why, in the 30 tables of lunations, we began each nineteen-year Cycle either from Epact * or from Epact 1, and why the first lunation of the whole Cycle takes its beginning either from the Kalends of January or from the last of December; while meanwhile all the golden numbers gave the beginning to the nineteen-year Cycle [at the same points].

Furthermore, that you may see that those two days must necessarily be assigned to the beginning of our nineteen-year Cycle, we shall show that the same thing would have to be done in the Cycle of the golden number, if it were described in the Calendar. Let us therefore take in hand the ancient Roman Calendar, in which golden number 3 is placed at the first day of January, and in which both equations — namely of the solar year and of the lunar — were preserved. For the beginning of the Cycle of the golden number has always been taken from the point at which golden number 3 is placed at the first day of January; because, right up to our correction, the beginning of the Cycle was always taken there, for the reason that from golden number 3 the embolismic years are numbered, as will be most plainly established from what we shall deliver a little further on, concerning the embolisms, in this same chapter.

[Margin: That the Cycle of the golden number, before the correction, always began from golden number 3.]

And so, if on account of the equation of the solar year — the Moon not yet requiring an equation — the several golden numbers must be moved downward by one day, golden number 3 will be written at the second day of January, and to the first day will be prefixed golden number 14, since this is always positioned next above it in other places of the Calendar. Therefore the beginning of the Cycle will then be made from golden number 14; and if from the same first day the golden numbers must be moved downward, golden number [3] will fall

onto the third day of January, and golden number 14 onto the second, while the first day will appear empty — because above golden number 14 is set golden

number 6, not immediately, but with one empty day left between, as is clear from Chapter 2 of this book. Therefore the beginning of the Cycle cannot then be made from the first day of January, since no golden number is placed there; nor indeed will golden number 14, now written [in that place], give the beginning: because the lunation beginning on the second day, while golden number [14] is current, is the second of that year, not the first, as we taught before. The Cycle must therefore then be begun from that golden number which would have to be ascribed to the last day of December, if the solar year began from there — that is, from golden number 6, which in the Calendar is always two days higher than 14. For the lunation then falling on the last day of December is the first of the whole following year, which indeed golden number 6 indicates, the one that shows the new moons in the preceding year; and it is then ascribed to the last day of December, since it must be moved forward by two days from the 29th day of December, where it is described in the ancient Calendar. But the reason why golden number 6 must then be placed at the last day of December — the number which in the ancient Calendar is found always written above 14 — is that the golden numbers cannot preserve in the Calendar the order in which they are placed, as was stated [declared] in Chapter 2 of this book, [in the discussion] of the golden numbers, whose index letter is a capital M. This is clear if, on account of the equation of the Moon (the solar year then not requiring an equation), the several golden numbers had to be moved upward in the Calendar by one day: [golden number 14, previously] inscribed [at the second day], would ascend to the second day [?], golden number 3 would be [at] the last of December, with the first day of January left empty, since there [is] no golden number there — [so that the Cycle would begin] not from the first day of January, but from the last day of December, according to the argument brought forward above, if we were to begin the solar year from there. Although, because [the golden numbers] do not preserve in the Calendar the order [?] of the Cycle of the golden number, as we said, [golden number] 2 [falls] under golden number 13, which then [falls on the second-to-last day of December];... in the thirtieth Calendar of golden numbers [?].... the beginning of the Cycle of golden numbers thereafter [is taken] from the first day of January, if a golden number is placed there,... [or from the last day, if] the first day of January has no golden number,... since all the golden numbers..., on the first day of January and on the last of December,... in which the same golden numbers occupy various days, according, that is, to the 30 rows [of the expanded table] to which they correspond.

[Margin: That the beginning of the Cycle of the golden number is taken successively from all the golden numbers, if the equation of the solar year and of the lunar year is applied.]

Our Cycle of Epacts in the Calendar is fixed, and Epact 1 would always have to be placed at the last day of December, if the year began there — so that Epact 1 at the last day of December would perpetually be the point from which the beginning of the nineteen-year Cycle of our Epacts must be taken, namely from Epact 1, as has been declared.

The Alexandrians, moreover, always [began the Cycle of the golden number] from the last day of their year, which corresponds to the 28th day of our August; for at the first day of the year — that is, of the month Thoth, which corresponds to the 29th [of August] — they placed a golden number, because at that time no new moon fell on the first [day]. But on the last day — that is, on the 35th day of the month Mesore, which corresponds to the 28th of August — golden number 19 was placed, which then stood as the equivalent of golden number 1; since golden number 1 was taken in place of golden number 19, which gave the beginning in the following year. [?] Their Cycle began from golden number 1. But in the Ecclesiastical Calendar, according to the practice of the Church, [it was] on golden number 3 [that] a new moon fell, by the usage of the Church, on the first day of January [?];... and so the Cycle of the golden number always took its beginning from it, that is, from golden number 3, as we said above.

[Margin: Why every nineteen-year Cycle of Epacts always begins from *, or from Epact 1. That the Cycle of the golden number, among the Alexandrians, always began from the last day of their year, and from golden number 1.]

But let us now proceed to the explanation of the embolisms. An embolism, then, is a lunar year [containing 384 or 383 days], as we shall shortly say. Nor should it seem strange to anyone that, in a single [solar] year that contains only 365 days, 13 lunations can occur. For since, as was stated above, the lunations are assigned to the months in which they end, so that every lunation beginning in the month of December and ending in whatever [month] is to be ascribed to January and called the first of the whole year, it can happen that in certain years, after the first lunation of some year, there still remain 12 whole lunations before we come to the first lunation of the following year — namely, if after the first lunation of some year there remain 353 days, which is precisely the number comprehended by 12 lunations. When, then, this happens, there are 13 lunations in that lunar year, and it is called an embolismic year, containing 384 or 383 days, although the solar year consists of only 365 days. But when, after the first lunation of some year, there remain only 11 whole lunations, [the year] is called common, containing 354 or 353 days.

[Margin: By what reasoning 13 lunations can be contained in a single year. That in every nineteen-year Cycle there are 7 embolismic years, how this may be known, and which they are.]

And since the solar year described in the Calendar, of 365 days, exceeds the common lunar year [of] 354 [days] by 11 days, we shall easily recognize which years in each nineteen-year Cycle are embolismic — that is, of 13 lunations — and how many. For whenever, out of those 11 days [that remain over in each single year], which are left over in each solar year, the collected sum has become 30 or greater, then [the lunations] will be completed in that year — save in the nineteenth year of the Cycle, in which a sum of only 29 days [is collected]; because from that sum of days one lunation is produced [namely, a sum of 30 days yields one lunation, and a sum of 29 days combined also yields one lunation] — which, added to the other 12 lunations that were completed before it, makes 13 lunations. This

[Margin: Why in every nineteen-year Cycle the years 3, 6, 9, 11, 14, 17, and 19 are embolismic.]

This, moreover, happens in each Cycle only seven times — namely in the years 3, 6, 9, 11, 14, 17, and 19 of every Cycle — which are all, and the only ones, that are embolismic, as is clear from the 30 tables of Lunations. For in each Cycle there are found 7 years of 13 Lunations, and the reason for this is as follows.

In the first three years of the Cycle, 11 days are left over three times, making 33 days; of these, 30 are assigned to the thirteenth (or embolismic) Lunation of the third year, and 3 days still remain. Joined to the 11 residual days in the years 4, 5, and 6, these make 36 days, of which again 30 are assigned to the thirteenth (or embolismic) Lunation of the sixth year, and 6 days still remain. These, with the residual 11 days in the years 7, 8, and 9, make 39 days. Out of these, 30 complete the embolismic Lunation of the ninth year; the remaining 9 days, with twice-11 residual days in years 10 and 11, make up 31 days, of which 30 are assigned to the embolismic Lunation of the eleventh year, while 1 day is left over. This, with the thrice-11 residual days in years 12, 13, and 14, makes 34 days, of which 30 go to the embolismic Lunation of the fourteenth year, and the remaining 4 days, with the thrice-11 superfluous days in years 15, 16, and 17, make 37 days, of which 30 fill out the embolismic Lunation of the seventeenth year. But the remaining 7 days, with the twice-11 superfluous days in years 18 and 19, make 29 days for the embolismic Lunation of the nineteenth and last year. For it is necessary that one of the 7 extraordinary Lunations comprise only 29 days, since in 19 years the 11 days that are left over each year make up 209 days, which produce six Lunations

of 30 days each and one of 29 days — because it lacks one day to complete the number of 30 days. For 210 days would make 7 Lunations of 30 days.

[Margin: When an embolismic year contains 384 days, and when 383.]

Therefore an embolismic year whose Lunation contains 30 days will comprise 384 days; but one that has an embolismic Lunation of 29 days will contain 383 — because the 354 days of the twelve Lunations, together with the 30 days of the embolismic Lunation, make 384, whereas with the 29 days of the embolismic Lunation they make only 383.

And this is the natural order of the 7 embolisms contained in any nineteen-year Cycle: that the first six embolismic Lunations should each contain 30 days, and the seventh and last only 29. Yet this order is usually altered, so that the seventh embolismic Lunation is not always the one of 29 days, but sometimes some other — the alternation of 30- and 29-day Lunations requiring this — because the nineteen-year Cycle does not always begin from golden number 1, but from some other. For, of all the nineteen-year Cycles of Epacts in the 30 expanded tables, only two — those to which lines 8 and 9 of that table refer, prefixed by the capital letters **D** and **C** — take their beginning from golden number 1. Hence only in those is the nineteenth year, which is the seventh embolism, the one that contains the embolismic Lunation of 29 days; in the other Cycles the seventh embolism will have an embolismic Lunation of 30 days, and the embolismic Lunation of 29 days will be assigned to some other embolism, as will become clear from what we shall say a little further on — once we have first explained somewhat more fully how these 7 embolisms stand in each nineteen-year Cycle of our Epacts, which always begins either from Epact * or from Epact i, as was stated above.

[Margin: That the first Lunation of an embolismic year ends on one of the first 11 days of January, and why.]

Whenever, then, the first Lunation of some year ends on one of the first 11 days of January — (for we showed above that every Lunation ending in the month of January, even on its first day, is assigned to January and is the first of the whole year) — that year is necessarily embolismic. For if the first Lunation ends on 11 January, there will remain in that year, up to the end of December, 354 days, in which 12 more Lunations can still occur. Hence that year will comprise 13 Lunations, and so will be embolismic. But if the first Lunation ends before 11 January, more than 354 days will remain in that year up to the end of December; and so 12 more Lunations can occur in them, and some days besides — at least

one — will remain over. Thus this year too will be embolismic, since it comprises 13 Lunations.

[Margin: That eleven Epacts are always embolismic — that is, that a year is embolismic in which one of them is current, with whatever golden number is running — and which they are.]

From this it follows that these eleven Epacts — xix. xx. xxi. xxii. xxiii. xxiiii. xxv. 25. xxvi. xxvii. xxviii. xxix. (for we count xxv and 25 as one Epact) — set against the first 11 days after the Calends of January, are always embolismic; so that a year whose Epact is any one of those 11, whatever golden number is then current, is embolismic. This is because a Lunation beginning in January from any one of those Epacts is the second of that year, while the one preceding it began in the month of December, being completed [in January].

Hence, again, it is gathered that in any embolismic year the thirteenth (or last) Lunation necessarily ends on one of the last 11 days of December, to which these Epacts are ascribed: xxix. xxviii. xxvii. xxvi. xxv. 25. xxiiii. xxiii. xxii. xxi. xx. 19. For if some Lunation ends on any one of those 11 days, the following Lunation — which is the first of the next year after the embolism — begins from one of those 11 Epacts which are prefixed to the 11 days following the first day of January, and which we have said are embolismic. This is proof that throughout the year whose last Lunation ends on one of the last 11 days of December, that embolismic Epact was in use from which the following first Lunation of the next year begins, and therefore that that year was embolismic. There is only one exception: when the last Lunation of an embolismic year — with Epact xix running together with golden number 19 — begins not from Epact xix but from Epact *, which is not embolismic. The reason for this is that the last year [of the Cycle] passes over, in the following year, into Epact *. For if that year did not close on the last day of December, and Epact xix were then changed, the Lunation would have to be written — in its natural order, that is — under Epact xix, corresponding to the day now assigned to the first of December [?]; and thus the first Lunation after the embolismic year would then also begin from Epact xix, which is embolismic. [?]

And to make it plainer that these eleven Epacts — xix. xx. xxi. xxii. xxiii. xxiiii. xxv. 25. xxvi. xxvii. xxviii. xxix. — are all embolismic, and the only ones, all 30 lines of Epacts

of the expanded tables must be carefully considered. For in each of them you will always find seven of those 11 Epacts placed in the third, sixth, ninth, eleventh,

fourteenth, seventeenth, and nineteenth position from Epact * (if that is contained in the line taken), or from Epact j (if Epact * is not found in the line taken). Since, then, every nineteen-year Cycle of our Epacts takes its beginning either from Epact * or from Epact j, and in every Cycle these seven years — the third, sixth, ninth, eleventh, fourteenth, seventeenth, and nineteenth — are embolismic, as has been said, it is clearly concluded that those 11 Epacts which we said were ascribed to the 11 days following the first day of January are embolismic. The same is gathered still more evidently from the 30 tables of Lunations, in which all those 11 Epacts have 13 Lunations and so are embolismic, whereas the other Epacts comprise only 12 Lunations.

[Margin: That these enumerated Embolisms, and the 7 years in each nineteen-year Cycle, are all — and the only ones — that are embolismic, and how this is recognized from the expanded table and from the 30 tables of Lunations.]

To these eleven embolismic Epacts must sometimes be added Epact xviii. For this too is embolismic in the year in which the golden number is 19 — which indeed happens in one Cycle only, out of all 30 Cycles of the expanded table, namely the ninth, to which the capital letter **C** is prefixed. For in that one alone Epact xviii occupies the nineteenth place from Epact *, from which that Cycle begins; and it has been shown above that the nineteenth year of any Cycle is embolismic. In no other Cycle is Epact xviii found in an embolismic place — that is, in the third, sixth, ninth, eleventh, fourteenth, seventeenth, or nineteenth from Epact * or j, which is the beginning of the Cycle.

[Margin: That the year in which Epact xviii and golden number 19 concur is also an embolism, and why.]

The reason why Epact xviii is then embolismic is twofold. Let the first be this. When Epact xviii and golden number 19 concur, 12 must be added to it, so that Epact xxx (or *) of the following year is formed, as we showed in the previous Chapter. Hence the last Luration of the year in which Epact xviii, together with golden number 19, is in use ends on the last day of December, and so is to be assigned to December. From this it follows that in that same year 13 Lunations are contained, of which the first ends on 12 January, having its beginning on 14 December, from Epact viii, which was in use the previous year. The twelfth Luration of that same year closes on 2 December, and the thirteenth on the last day of that month. Let the second reason be this. Since the year in which Epact xviii and golden number 19 concur is the last of the nineteen-year Cycle — as is clear from that ninth line of the expanded table which has the capital letter **C** — the last, embolismic Luration in it will contain only 29 days, as we said above.

Therefore, since its first Lunation ends on 12 January, there still remain 353 days, which are enough to fill out 12 Lunations, of which the last comprises only 29 days; and so that year, containing 13 Lunations, will be embolismic, and will comprise only 383 days.

[Margin: Why the year in which Epact xviii does not concur with golden number 19 is not embolismic.]

But when Epact xviii concurs not with golden number 19 but with any other, only 11 (not 12) are added to it, so that Epact xxix of the following year is formed. Hence, once the twelfth Lunation of the year has ended on 2 December, while Epact xviii is in use, the first Lunation of the following year will begin on 3 December and will end on the Calends of January; and therefore the earlier year will be common, since it comprises only 12 Lunations, while the later year will be embolismic, of 13 Lunations, since its Epact is xxix, which we said above is embolismic. And so those 11 Epacts — xix. xx. xxi. xxii. xxiii. xxiiii. xxv. 25. xxvi. xxvii. xxviii. xxix. — inscribed against the 11 days following the first day of January, are always embolismic, with whatever golden number they concur; but Epact xviii, set against 13 January, is never embolismic, except when golden number 19 is used together with it. All this appears most clearly in the 30 tables of Lunations above. For in the ninth table alone you see Epact xviii, running with golden number 19, having 13 Lunations; in the others, only 12. Wherefore Epact xviii may be called ambiguous, or indifferent — now embolismic, now not — whereas all the other Epacts are perpetually either embolismic or common.

[Margin: Which seven golden numbers were embolismic in the old Calendar.]

In the old Calendar these seven golden numbers were embolismic: 2, 5, 8, 11, 13, 16, 19 — as Campanus [Campanus of Novara] rightly teaches, though some other Computists differ somewhat from him. For since all of them are written near some of the 11 days following the Calends of January — that is, since they are placed in the Calendar between the first and the thirteenth of January, just like our embolismic Epacts — the Lunation ending in January just before any one of them (namely on the second, fourth, fifth, seventh, eighth, tenth, or eleventh day) is the first of the whole year; after which, since at the least 354 days remain in the year, which are enough to fill out 12 other Lunations, that year comprises 13 Lunations, the second of which takes its beginning in January from one of those seven golden numbers. Hence the year whose golden number is any one of those seven will be embolismic.

[Margin: That in the old Calendar the golden-number cycle necessarily took its beginning from 3.]

And since only seven years in any nineteen-year Cycle — namely 3, 6, 9, 11, 14, 17, and 19 — are embolismic (because in them alone those superfluous days which, as we said, are left over each solar year can make up one extraordinary Luration, as we said before), it is clearly gathered that in the old Calendar the cycle of the golden number always took its beginning from golden number 3, as we said above — because those seven embolismic golden numbers occupy, counting from golden number 3 alone, the third, sixth, ninth, eleventh, fourteenth, seventeenth, and nineteenth place, as appears in this table.

| Ordo annorum Cycly | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------------|---|---|---|---|---|---|---|----|----|----|
| Cyclus aur. num. | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Aur. num. Embolis. | | | 5 | | | 8 | | | 11 | |

| Ordo annorum Cycli | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|--------------------|----|----|----|----|----|----|----|----|----|
| Cyclus aur. num. | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 1 | 2 |
| Aur. num. Embolis. | 13 | | | 16 | | | 19 | | 2 |

(*Table.* Two stacked panels covering the 19 years of the Cycle. Row 1, "Ordo annorum Cycly / Cycli" [Order of the years of the Cycle]: 1–19. Row 2, "Cyclus aur. num." [Cycle of the golden number]: the golden number belonging to each cycle-year, running 3, 4, 5 ... 19, 1, 2. Row 3, "Aur. num. Embolis." [Embolismic golden numbers]: only the seven embolismic golden numbers are entered, each in its column — 5, 8, 11, 13, 16, 19, 2 — the remaining cells blank as printed. Note the printed variant "Cycly" in the upper panel's first label versus "Cycli" in the lower.)

[Margin: That in the old Calendar the golden-number cycle could take its beginning from no number other than 3.]

Furthermore, that in the old Calendar the cycle of the golden number could take its beginning from no other number than 3 will likewise be made plain. If golden number 3 is set first in the Cycle, 11 days are left over in that year after the twelfth Luration; 22 in the second year, with golden number 4 running; and 33 in the third year, with golden number 5 running — and therefore golden number 5 will be embolismic. By the same reasoning these golden numbers will be embolismic: 8, 11, 13, 16, 19, 2 — as Campanus held, and as reason itself requires, since, when these golden numbers are running, the first Luration of the year

always ends on one of the first 11 days of January, which is necessarily required for a year to be embolismic, as we said above. This would by no means happen if some other golden number were set first in the Cycle. For if, for example, golden number 1 were said to be first, 11 days would then be left over; and with golden number 2 running, 22; and 33 with golden number 3 running. So golden number 3 would be embolismic; and by the same reasoning golden numbers 6, 9, 11, 14, 17, 19 would be embolismic — which is false, and contrary both to Campanus and to reason, since none of these 7 golden numbers, except 11 and 19, contains 13 Lunations. Golden number 1, therefore, cannot be first in the Cycle; and for the same reason no other than 3 can be first.

[Margin: Which of the 13 Lunations of an embolismic year is to be called extraordinary, or embolismic.]

Now it is of no great importance which of the 13 Lunations of an embolismic year is called the extraordinary, or embolismic, one — provided that the magnitudes of the 12 [ordinary] Lunations, as the Cycle requires, remain intact and undisturbed as far as possible, that is, that they be set alternately at 30 and 29 days. To achieve this more correctly, this rule must be observed. Whenever, in an embolismic year, the last (or 13th) Luration contains 30 days, we shall call it the embolismic or extraordinary one, because then the preceding 12 Lunations alternately contain 30 and 29 days, as the reckoning of the Cycle requires. This happens when one of these embolismic Epacts — xix. xx. xxi. xxii. xxiii. xxiiii. — is in use, to which Epact 25 is to be added (marked with a different figure or colour, as is clear from the 30 tables of Lunations), provided that Epact xix and golden number 19 do not concur. For then the 13th Luration of the year comprises only 29 days, as happens in the 8th line of the expanded table, to which the capital letter **D** is ascribed, and to which the 8th of the 30 tables of Lunations corresponds.

But if ever those Epacts are used together with golden number 1 — as happens with those which, in lines 15, 16, 17, 18, 19, and 20 of the expanded table, are marked with the minuscule letters r, q, p, n, m, l, and likewise in the 6 tables of Lunations corresponding to those letters (excepting Epact 25, written with a different figure or colour, which can never concur with golden number 1, since it can concur only with golden numbers greater than 11) — then both the first Luration of the year and the second will contain only 29 days. For when the Epacts of the [preceding] year concurring with golden number 19 are increased by 12, so that the Epact of the following year concurring with golden number 1 is produced, as we showed above, it happens that three continuous Lunations of 29

days are set up — namely the two first Lunations of the embolismic year and the last, embolismic Luration of the preceding year — the middle one lying between the other two of the same number of days. Therefore the first Luration could indeed then be [reckoned embolismic], and only 29 days might deservedly be assigned to the embolismic Luration of that year, since the other six embolismic Lunations of that Cycle together comprise 383 days [?]. Yet, lest the other Lunations of that year disturb the order of 30 and 29 days, and lest the last, ordinary Luration, which is usually of 29 days, come to contain 30, it was decided to make the last Luration, of 30 days, the embolismic one — just as if, in the manner of the old Computists, one day were added to the embolismic Luration of that year (which ought to be of only 29 days), a day subtracted from the first Luration of the year on account of the addition of 12 to the Epact running with golden number 19. This subtraction the Computists called the "leap of the Moon" (*saltus Lunae*), of which we shall say a little more just below. Yet let it be free for anyone, if he prefers, to call the first Luration of 29 days the embolismic one, since no absurdity follows from this.

[Margin: Which embolismic Epact has its 13th Luration of 30 days and embolismic.]

[Margin: When an embolismic Epact, whose 13th Luration is of 30 days, has the first Luration of the year of 29 days.]

But when the thirteenth Luration of an embolismic year contains only 29 days, and that embolismic year is the last in the Cycle — which comes about when Epact xviii, as well as Epact xix and golden number 19, concur (which happens only twice in the whole span during which all 30 Cycles of the expanded table are used, namely when lines 8 and 9 of that table, marked with the capital letters **D**, **C**, and to which tables 8 and 9 of the Lunations correspond, are in use) — then that last Luration of the year will be called embolismic; because the preceding 12 Lunations alternate at 30 and 29 days, and the last, embolismic Luration in that Cycle ought to contain only 30 days, as is clear from what we said above, since the other six embolismic Lunations of that Cycle comprise 30 days.

[Margin: Epacts xviii and xix concurring with golden number 19 have the 13th Luration embolismic and of 29 days.]

[Margin: Which embolismic Epact has the first Luration of the year embolismic and of 29 days.]

But whenever the thirteenth Luration comprises only 29 days, yet that embolismic year is not the last in the Cycle — provided that the first Luration too

is set at 29 days (which happens when any one of these Epacts — xxv. xxvi. xxvii. xxviii. xxix. — and golden number 1 concur, as appears in lines 10, 11, 12, 13, 14 of the expanded table, which have the capital letters **B, A** prefixed, and the minuscule letters [u, t, s?], and likewise in the five corresponding tables of Lunations) — then that last Luration of 29 days will not be reckoned the embolismic one, but rather the first of that year, which is likewise of 29 days. For since the last Luration of the preceding year then also consists of only 29 days, the first Luration of the following year will not unfairly be called the extraordinary and embolismic one, since the other 12 following Lunations alternate through 30 and 29 days — especially since that embolismic Luration ought to contain only 29 days, seeing that the other six [embolismic Lunations] of the same Cycle contain 30. But if the first Luration is not of only 29 days, but both the first and the second comprise [30] days [?] — which happens when any one of those Epacts we mentioned, xxv. xxvi. xxvii. xxviii. xxix., runs with some golden number other than 1, as is clear from the 30 tables of Lunations — then the second Luration, of 30 days, will rightly be called the embolismic and extraordinary one, since the other 12 keep the alternating order of 30 and 29 days. Nor need it seem strange to anyone that we do not always place the embolismic Lunations in the same year and month, because these fall naturally, according to the reckoning of the Cycle, in such a way that

they fall out as we have explained, and among the old computists they were also assigned various places and months.

PORRO. Furthermore, whenever — because of the addition of 12 to the epact running with golden number 16 — a single day is subtracted from the first luration of a common lunar year, so that that year is completed with only 353 days (as happens in cycles 1, 2, 3, 4, 5, 6, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30 of the expanded table, which have prefixed to them the capital letters P, N, M, H, G, F, E and the small letters i, h, g, f, e, d, c, b, a, as may be seen in the tables of lunations that correspond to these cycles — for in all these, and these alone, the year in which the golden number is 1 is common, and the first luration of that year contains 29 days) — this subtraction is what the computists usually call the LEAP OF THE MOON [saltus lunae]. For since the true lunar year consists of 354 days, one day is taken from it and assigned to the last embolismic year, so that it may contain 384 days and each of the 7 embolismic lunations be constituted of 30 days; whereas the last embolismic year, by its own nature, ought to embrace only 383 days, and its last embolismic luration only 29. And so, on account of this subtraction, the Moon seems in a way to leap forward by one day in the calendar,

since that first lunation is made to be only 29 days when by itself it ought to have been completed at 30.

[Margin: What the leap of the Moon is among the computists, and from where the common lunar year is diminished.]

EADEM. By the same reasoning, when in an embolismic year the first lunation is embolismic at 29 days, while the other twelve are constituted alternately of 30 and 29 days (as happens in cycles 10, 11, 12, 13, and 14 of the expanded table, which are prefixed with the capital letters B, A and the small letters v, t, s, as is clear in the corresponding tables of lunations), one may rightly say that the leap of the Moon occurs in that lunation. For since the last lunation of the preceding year is 29 days, the first lunation of the following embolismic year ought to be constituted of 30 days. Therefore, since one day is subtracted from it and it is made embolismic, while the day removed is added to the last embolismic lunation of the same cycle so that it becomes 30 days (which otherwise ought to embrace only 29), even then the Moon seems in a way to leap by one day in the calendar.

[Margin: When, in an embolismic year, a leap of the Moon can occur.]

DENIQUE. Finally, when in an embolismic year the two first lunations comprise only 29 days (as happens in cycles 15, 16, 17, 18, and 20 of the expanded table, as may be seen in the corresponding tables of lunations), we shall likewise be able to say that the leap of the Moon then occurs in the first lunation — because from it, which ought to have 30 days, one day is taken and joined to the last embolismic lunation of that cycle, so that this contains 30 days when nevertheless it ought to embrace only 29.

QVIN. Moreover, when in the last embolismic year of some cycle the thirteenth lunation is embolismic and contains only 29 days (as occurs in cycles 8 and 9 of the expanded table of the letters D, C and the small letters, and in the 8th and 9th tables of lunations), one may not unreasonably suppose that here too a leap of the Moon in a way occurs. For since the twelfth lunation of that year consists of 29 days, the following thirteenth ought, according to the reckoning of the cycle, to be constituted of 30 days, and the subsequent first lunation of the next year of 29. Since, then, that lunation contains only 29 days, one day is taken from it and added to the first lunation of the following common year, so that it comes to be 30 days, which otherwise, as has been said, ought to be only 29.

[Margin: Which embolismic years are constituted of only 383 days, and which common lunar years of only 353 days.]

ATQVE. And all these embolismic years, in which we have said the leap of the Moon occurs, contain only 383 days, while all the others comprise 384. The common years, by contrast, in which the leap of the Moon occurs, are constituted of only 353 days, while all the rest of 354 — as is evident from the 30 tables of lunations above.

EX. From what we have said, it can be made plain that the leap of the Moon occurs only when two or three lunations of 29 days run continuously in the calendar, and never otherwise. This indeed always happens when the golden number is 1, whether that year be common or embolismic, because to the epact of the preceding year concurring with golden number 19 there are added 12, to make the epact of the following year concurring with golden number 1, as was said above. Excepted are the two embolismic years of epacts xix and xviii concurring with golden number 19; for in these the leap of the Moon occurs while golden number 19 is running, not 1, as is clear from the 8th and 9th tables of lunations.

[Margin: That the leap of the Moon always occurs when the golden number is 1, and never otherwise, whether the year be common or embolismic.]

NON. I am not unaware that this leap of the Moon is less approved by many, on the ground that no such leap at all occurs in the heavens. Nevertheless, since the reckoning of each cycle requires that now and then one day be taken from one lunation to be added to another, we were unwilling to depart from the customary manner of speaking of the computists. Yet let everyone be free in this matter to speak as he pleases, provided only that he rightly understands the thing itself, and that it be explained.

[Margin: Why the leap of the Moon displeases most people.]

HINC. From this too it follows that, on account of the embolisms and the leap of the Moon, the lunations do not always proceed alternately by 30 and 29 days, as their condition and nature seem to require, but that sometimes two consecutive lunations occur, now of 30 days, now of 29; indeed sometimes three of 29 days; and — what may seem more surprising — that in a bissextile year, on account of the intercalary day, four consecutive lunations may comprise 30 days. This is nothing new or absurd, since the reckoning of any cycle requires it, and the same was done among the old computists in the cycle of the golden number of the Council of Nicaea, which prevailed right up to this Gregorian correction — as is plain in the table set out below, in which all the lunations of the golden numbers of the old calendar are described, just as in the 30 tables above the lunations of

the epacts were expressed, as they occur in the 30 nineteen-year cycles. And from this table it is clear that the seven embolisms of the whole cycle, which begins from golden number 3, fall in those years of the cycle into which, according to our epacts, we showed above that they fall. It is likewise established that golden number 19 produces three consecutive lunations — namely the seventh, eighth, and ninth — of 29 days; and that golden number 11, if [the year] be bissextile [si à nis in bissextilis (?); text corrupt — the sense is "if the year be bissextile"], and the lunation of the month of February therefore be increased by one day, exhibits the first four lunations of the year as 30 days.

[Margin: That, on account of the embolisms and the leap of the Moon, it sometimes happens that two or three consecutive lunations are of [9 — recte 29] days, and two or four of 30 days.]

THERE FOLLOWS

A TABLE OF THE LUNATIONS OF THE GOLDEN NUMBERS described in the old calendar.

HOW MANY DAYS EACH LUNATION of the golden numbers contains in the old calendar, both in the common year and in the embolismic.

[Table title, verbatim: *QVOT DIES LVNATIO QVAElibet aureorum numerorum contineat in Calendario veteri tam in anno communi, quam in Embolismico.*]

The table has five heading columns on the left (golden number; beginning of the first lunar month, common and embolismic; end of the twelfth lunar month, common and embolismic; end of the thirteenth lunar month, in the embolismic year; magnitude of the lunar year, common and embolismic), followed by the block **NVMERVS ET ORDO Lunationum totius Anni** (Number and order of the lunations of the whole year), i.e. the lengths of the 1st through 13th lunation (Prima ... Tertiadecima Lunatio). The thirteenth lunation (Tertiadecima) is blank in common (354-day) years. Row order as printed: golden numbers 3–19, then 1, 2.

| Au
re
us | Initium primi
mensis Lunar
(comm. & emb.) | Finis 12mi
mensis Lunar
(comm. & emb.) | Finis 13mi
mensis Lunar
(emb.) | Magnitudo anni
Lunar |
|----------------|---|--|--------------------------------------|-------------------------|
| 3 | 1 Ian. | 20 Dec. | — | 354 |
| 4 | 21 Dec. | 9 | — | 354 |

| Au
re
us | Initium primi
mensis Lunar
(comm. & emb.) | Finis 12mi
mensis Lunar
(comm. & emb.) | Finis 13mi
mensis Lunar
(emb.) | Magnitudo anni
Lunar |
|----------------|---|--|--------------------------------------|-------------------------|
| 5 | 10 | 29 Nou. | 28 Dec. | 384 |
| 6 | 29 | 17 Dec. | — | 354 |
| 7 | 18 | 6 | — | 354 |
| 8 | 7 | 26 Nou. | 25 Dec. | 384 |
| 9 | 26 | 14 Dec. | — | 354 |
| 10 | 15 | 3 | — | 354 |
| 11 | 4 | 23 Nou. | 22 Dec. | 384 |
| 12 | 23 | 11 De. | — | 354 |
| 13 | 12 | 30 Nou. | 30 Dec. | 384 |
| 14 | 31 | 19 | — | 354 |
| 15 | 20 | 8 | — | 354 |
| 16 | 9 | 28 Nou. | 27 Dec. | 384 |
| 17 | 28 | 16 | — | 354 |
| 18 | 17 | 5 | — | 354 |
| 19 | 6 | 24 Nou. | 23 Dec. | 383 |
| 1 | 24 | 12 D[ec]. | — | 354 |
| 2 | 13 | 1. Dec. | 31 Dec. | 384 |

NVMERVS ET ORDO Lunationum totius Anni — lengths (days) of the 1st–13th lunation, keyed to the same golden number. (The Tertiadecima column is blank "—" for 354-day years.)

| Aureus | I | | | IV | V | | | VIII | I | | X | | |
|--------|---|---|-----|----|---|---|-----|------|---|----|---|-----|------|
| | I | I | III | | V | I | VII | | X | X | I | XII | XIII |
| 3 | 3 | 2 | 30 | 29 | 3 | 2 | 30 | 29 | 3 | 29 | 3 | 29 | — |
| | 0 | 9 | | | 0 | 9 | | | 0 | | 0 | | |
| 4 | 3 | 2 | 30 | 29 | 3 | 2 | 30 | 29 | 3 | 29 | 3 | 29 | — |
| | 0 | 9 | | | 0 | 9 | | | 0 | | 0 | | |
| 5 | 3 | 2 | 30 | 29 | 3 | 2 | 30 | 29 | 3 | 30 | 2 | 30 | 29 |
| | 0 | 9 | | | 0 | 9 | | | 0 | | 9 | | |
| 6 | 3 | 2 | 30 | 29 | 3 | 2 | 30 | 29 | 3 | 29 | 3 | 29 | — |
| | 0 | 9 | | | 0 | 9 | | | 0 | | 0 | | |

| Aureus | I | | | IV | V | | | VIII | I | | X | | |
|--------|--------|--------|-------|-------|--------|--------|-------|------|--------|-------|--------|-----|------|
| | I | I | III | | V | I | VII | | X | X | I | XII | XIII |
| 7 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 8 | 3
0 | 2
9 | 30 | 30 | 2
9 | 3
0 | 29 | 30 | 2
9 | 30 | 2
9 | 30 | 29 |
| 9 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 10 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 11 | 3
0 | 3
0 | 29 | 30 | 2
9 | 3
0 | 29 | 30 | 2
9 | 30 | 2
9 | 30 | 29 |
| 12 | 3
0 | 3
0 | 29 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 13 | 3
0 | 3
0 | 29 | 30 | 2
9 | 3
0 | 30[?] | 29 | 3
0 | 29 | 3
0 | 29 | 30 |
| 14 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 15 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 16 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 30 | 2
9 | 30 | 29 |
| 17 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 18 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 19 | 3
0 | 2
9 | 30[?] | 30[?] | 2
9 | 3
0 | 29 | 29 | 3
0 | 30[?] | 2
9 | 30 | 29 |
| 1 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | — |
| 2 | 3
0 | 2
9 | 30 | 29 | 3
0 | 2
9 | 30 | 29 | 3
0 | 29 | 3
0 | 29 | 30 |

There follows

A TABLE OF THE NEW MOONS OF THE WHOLE YEAR, PERPETUAL.

A PERPETUAL TABLE OF THE NEW MOONS FOR THE WHOLE YEAR

[Table title, verbatim: *TABVLA NOVILVNIO RVM TOTius anni perpetua.*]

On which days of the months the new moons fall, whatever epact be running.

[*Quibus diebus mensium Nouilunia contingent, quacunque Epacta currente.*]

The left column gives the epacts (Epactæ), the twelve following columns the day of the month (Dies) on which the new moon falls in January through December, and the narrow right-hand column the year-type: **Coïs.** = *communis* (common), **Emb.** = *embolismicus* (embolismic), **Indiff.** = *indifferens*. The far right margin carries the vertical rubric **ANNI COMMVNES** ("common years") running down the lower rows. Note the doubled epact xxv / 25 (the Roman form and the Arabic form set as distinct sorts on adjacent rows, with slightly different columns). Entries of the form "1. 31" mean the new moon falls on both the 1st and the last day of that month.

| Epact
æ | Ian
. | Fe
b. | Ma
r. | Ap
r. | Ma
i. | Iun
. | Iul. | Au
g. | Sep
. | Oct
. | No
v. | Dec
. | — |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|
| * | 1.
31 | — | 1.
31 | 29 | 29 | 27 | 27 | 25 | 24 | 23 | 22 | 21 | Coïs. |
| xxix | 2 | 1 | 2 | 1.
30 | 30 | 28 | 28 | 26 | 25 | 24 | 23 | 22 | Emb. |
| xxviii | 3 | 2 | 3 | 2 | 1.
31 | 29 | 29 | 27 | 26 | 25 | 24 | 23 | Emb. |
| xxvii | 4 | 3 | 4 | 3 | 2 | 1.
30 | 30 | 28 | 27 | 26 | 25 | 24 | Emb. |
| xxvi | 5 | 4 | 5 | 4 | 3 | 2 | 1.
31 | 29 | 28 | 27 | 26 | 25 | Emb. |
| xxv | 6 | 5 | 6 | 5 | 4 | 3 | 2 | 1.
30 | 29 | 28 | 27 | 26 | Emb. |
| 25 | 6 | 4 | 6 | 4 | 4 | 2 | 2 | 30 | 28 | 28 | 26 | 26 | Emb. |
| xxiiii | 7 | 5 | 7 | 5 | 5 | 3 | 3 | 1.
31 | 29 | 29 | 27 | 27 | Emb. |
| xxiii | 8 | 6 | 8 | 6 | 6 | 4 | 4 | 2 | 1.
30 | 30 | 28 | 28 | Emb. |

| Epact
æ | Ian
. | Fe
b. | Ma
r. | Ap
r. | Ma
i. | Iun
. | Iul. | Au
g. | Sep
. | Oct
. | No
u. | Dec
. | — |
|------------|----------|----------|----------|----------|----------|----------|------|----------|----------|----------|----------|----------|--------|
| xxii | 9 | 7 | 9 | 7 | 7 | 5 | 5 | 3 | 2 | 1.
31 | 29 | 29 | Emb. |
| xxi | 10 | 8 | 10 | 8 | 8 | 6 | 6 | 4 | 3 | 2 | 1.
30 | 30 | Emb. |
| xx | 11 | 9 | 11 | 9 | 9 | 7 | 7 | 5 | 4 | 3 | 2 | 1.
31 | Emb. |
| xix | 12 | 10 | 12 | 10 | 10 | 8 | 8 | 6 | 5 | 4 | 3 | 2 | Emb. |
| xviii | 13 | 11 | 13 | 11 | 11 | 9 | 9 | 7 | 6 | 5 | 4 | 3 | Indiff |
| xvii | 14 | 12 | 14 | 12 | 12 | 10 | 10 | 8 | 7 | 6 | 5 | 4 | . |
| xvi | 15 | 13 | 15 | 13 | 13 | 11 | 11 | 9 | 8 | 7 | 6 | 5 | |
| xv | 16 | 14 | 16 | 14 | 14 | 12 | 12 | 10 | 9 | 8 | 7 | 6 | |
| xiiii | 17 | 15 | 17 | 15 | 15 | 13 | 13 | 11 | 10 | 9 | 8 | 7 | |
| xiii | 18 | 16 | 18 | 16 | 16 | 14 | 14 | 12 | 11 | 10 | 9 | 8 | |
| xii | 19 | 17 | 19 | 17 | 17 | 15 | 15 | 13 | 12 | 11 | 10 | 9 | |
| xi | 20 | 18 | 20 | 18 | 18 | 16 | 16 | 14 | 13 | 12 | 11 | 10 | |
| x | 21 | 19 | 21 | 19 | 19 | 17 | 17 | 15 | 14 | 13 | 12 | 11 | |
| ix | 22 | 20 | 22 | 20 | 20 | 18 | 18 | 16 | 15 | 14 | 13 | 12 | |
| viii | 23 | 21 | 23 | 21 | 21 | 19 | 19 | 17 | 16 | 15 | 14 | 13 | |
| vii | 24 | 22 | 24 | 22 | 22 | 20 | 20 | 18 | 17 | 16 | 15 | 14 | |
| vi | 25 | 23 | 25 | 23 | 23 | 21 | 21 | 19 | 18 | 17 | 16 | 15 | |
| v | 26 | 24 | 26 | 24 | 24 | 22 | 22 | 20 | 19 | 18 | 17 | 16 | |
| iiii | 27 | 25 | 27 | 25 | 25 | 23 | 23 | 21 | 20 | 19 | 18 | 17 | |
| iii | 28 | 26 | 28 | 26 | 26 | 24 | 24 | 22 | 21 | 20 | 19 | 18 | |
| ii | 29 | 27 | 29 | 27 | 27 | 25 | 25 | 23 | 22 | 21 | 20 | 19 | |
| j | 30 | 28 | 30 | 28 | 28 | 26 | 26 | 24 | 23 | 22 | 21 | 20 | |

Note beneath the table: *Quando Epacta xix. & aureus numerus 19. concurrunt, incidit aliud Nouilunium in diem 31. Decembris.* — "When the epact xix and the golden number 19 coincide, another new moon falls on 31 December."

What is to be Called the Paschal Fourteenth Moon, and Why the Epacts are Inscribed in the Calendar So That the New Moons Derived from Them Mostly Follow the Mean and True Conjunctions of the Luminaries

Caput VI

Since Maestlin vehemently attacks the new moons and the Paschal fourteenths — which in our new Calendar are laid out by means of the epacts in the manner we have described — on the ground (as he puts it) that the new moons do not correspond to the celestial motions, and that the Paschal fourteenths do not present the legitimate solemnity of Easter to be celebrated, I must here explain what is to be called the Paschal Luna 14, after which the Church, on the next following Sunday, has always been accustomed to celebrate Easter in accordance with the decrees of the Fathers and the Councils. I must also explain why, in order to determine this Paschal fourteenth correctly for any given year, we have deliberately equated the Cycle of Epacts inscribed in the Calendar in an expanded table, so that the new moons found from it for the most part follow the true and mean conjunctions of the luminaries. For in this matter, unless Maestlin is deliberately and maliciously pretending not to know a thing that is clear in itself and familiar to everyone, I do not see what he actually knows about the subject. He seems utterly ignorant of the custom that the whole Christian world has kept in the celebration of Easter, from almost the very beginning of the infant Church down to our own age, as we shall show later.

[Margin: The error of Maestlin and of others who think that Easter ought not to be celebrated on Luna 15.]

[Margin: That it was never forbidden that Easter be celebrated on Luna 15; otherwise Easter would often fall on Luna 22, contrary to the decrees of the Fathers and the Councils.]

[Margin: That the Church has frequently celebrated Easter on Luna 15.]

[Margin: That around the time of the Council of Nicaea Easter was never celebrated on the Luna 15 that preceded the mean full moon, and why.]

Above all, we proved at length in Chapters 1 and 3 of the previous book — both from the decrees of the Supreme Pontiffs and the Councils, and from various testimonies of writers, and from the unbroken usage of the Church — that Easter must be celebrated after the fourteenth Moon of the first month, up to the twenty-

first Moon, and therefore that it may rightly be celebrated on Luna 15 if that falls on a Sunday. So it is astonishing that some of the more recent writers — among whom is Maestlin, who fancy themselves wiser than those ancient Fathers, than the Councils, and than the continuous usage of the Church both Eastern and Western — are not afraid to assert so stubbornly that Easter must not be celebrated on Luna 15, that is, at the full moon, even if it falls on a Sunday; and this because they wrongly suppose that we would then be celebrating Easter together with the Jews. For Christians have never been forbidden to celebrate Easter at the mean full moon, that is, on Luna 15, even when the Jews are then performing the solemnity of their legal Passover; they have been forbidden only to celebrate Easter on Luna 14, when the Jews sacrifice the lamb toward evening. Otherwise, if Luna 15 (that is, the mean full moon) fell on a Sunday, and another Sunday had to be awaited, the Paschal feast would be celebrated on Luna 22 — that is, in the fourth week of the Moon — which is contrary to the decrees of the Councils and the Supreme Pontiffs, by which it is repeatedly enacted that Easter be celebrated after the fourteenth Moon of the first month up to and including the twenty-first, as we wrote in Chapters 1 and 3 of Book 1. Certainly in our own century, in which we live, we have more than once seen Easter celebrated, by the decree of the Council of Nicaea, on the 22nd of March — that is, on the Luna 15 that the cycle offered — since the Luna 14 of the cycle necessarily fell then on the 21st, before which day there can be no Paschal Luna 14, as we wrote in the previous book. Indeed, whenever the Luna 14 of the first month falls on a Saturday, Easter is celebrated on the very next Sunday, that is, on the Luna 15 that the cycle indicates.

But suppose someone objects that the Luna 15 found from the cycle, in these times before the correction of the year, always followed the mean full moon by a full four days and more, because the new moons had thus receded, advancing from their former places toward the beginnings of the months, and that Easter was therefore not celebrated on Luna 15 but after the mean full moon. The answer is that this happened by chance and (to speak with the philosophers) per accidens — namely, on account of that anticipation of the new moons — but that of itself, and by its own nature, that Easter fell upon the mean opposition; that is, it would have, had the new moons at that time been restored to their proper places. But grant that in our own age Easter was never celebrated at the mean full moon but after it, because of that anticipation of the new moons. Certainly around the time of the Council of Nicaea — that is, in the year 326 — by the decree of that same Council, Easter was celebrated on Luna 15 according to the cycle, on the 3rd of April, even though that Luna 15 then anticipated the mean full moon: for the golden number that year was 4, placing the Paschal terminus

(the Luna 14) on the 2nd of April, while the Dominical letter was B, assigned to the 3rd of April, and the mean opposition finally occurred on the 3rd of April at 12 hours 54 minutes after noon. The reason Easter then ran ahead of the mean opposition was the golden number, which at that time indicated the new moons too early. For from this it came about that the Luna 15 which the cycle offers — and which the Church observes in celebrating Easter, setting aside astronomical calculation — anticipated the mean opposition that the astronomical tables display, as we shall say below. The same thing happened in the years 330, 346, 350, 370, 394, 441, 475, 495, and others which it would take too long to recount here, in all of which Easter fell on Luna 15, and indeed before the mean opposition, for the reason we have stated, as will be clear from what follows.

[Margin: The erroneous opinion of Maestlin and of others concerning the Paschal Luna 14.]

Therefore, since Easter must necessarily be celebrated on the Sunday that next follows the Luna 14 of the first month — and thus on the Luna 15 itself, if that day is a Sunday — let us now set out what that Luna 14 is, and in what way, according to the most ancient usage of the Church, it is to be sought in the Calendar, so that no error or disagreement may arise in so great a solemnity. Some suppose that the Luna 14 is the very day of the opposition of the Sun and Moon; and Maestlin too seems to hold this view in this *Examen* of his, since he constantly objects against the new Calendar that the Luna 14 often precedes the opposition of the luminaries, and thus that Easter is frequently celebrated at this very full moon, if the day is then a Sunday — which he himself thinks absurd and contrary to the laws and usage of the Church. He therefore wants the Luna 14 to

fall upon the mean opposition itself, and never precede it, lest on the following day — if it be a Sunday — Easter should be able to be celebrated from Luna 15. But it is precisely here that Maestlin is most deceived. For since Easter can be celebrated at the full moon, as the usage of the Church has taught, along with the decrees of the Fathers and the Councils, which we showed above; and since it has been provided by those same authorities that Easter never be celebrated on the day of Luna 14 but always after it — who is so blind, except Maestlin (who nonetheless wants to be reckoned a Lynceus in this affair), as not to see that in the Church of God the Luna 14 and the full moon are not the same thing?

Others, granting that Easter can be celebrated on Luna 15, that is, at the full moon, because of the usage of the Church and the testimonies we brought forward in Book 1, suppose that the Luna 14 is the day that next precedes the true opposition. But not even this is true, since the Church never considers the true

motions — indeed, not even the mean — but only the cycles, as we demonstrated abundantly in Chapter 3 of the previous book.

[Margin: Another false opinion concerning the Paschal Luna 14.]

The Luna 14, then, is taken by the Church for the fourteenth day of the Paschal lunation, counting that day inclusively from the new moon [Neomenia], that is, from the beginning of the Paschal lunar month — that is, from the day to which is prefixed the number of the nineteen-year cycle [the golden number] that indicates the new moons in the Calendar for the year in question, whether that day agrees with the true or mean conjunction of the Sun and Moon or differs from it. This is confirmed by all who have written on the celebration of the feasts, and it appears most clearly from the ancient table of Easter and of the other movable feasts, which the Church used continually before the correction of the year: in it each golden number is prefixed to that day of March or April which is the fourteenth inclusively from the new moon shown by that same golden number, and after which the next following Sunday presents the most holy Easter. And this was always observed not only in the Western Church but also in the Eastern, as can be proved from the fact that before the restoration of the Calendar there never arose any disagreement or divergence in the celebration of Easter between the Easterns and the Westerns — which would not have been the case had the Luna 14 not been understood in the same way by both.

[Margin: The Paschal Luna 14 according to the usage of the Church, by which...]

Although in seeking the new moon — and the Luna 14 to be derived from it — the Church considers neither the true motions nor the mean, but measures them only according to the order of the cycle, it must nevertheless not be denied that the mean oppositions found from the astronomical tables are extremely useful for weighing and judging which cycle, out of many, is to be chosen: namely, one whose numbers, with the equation applied at their proper times, may perpetually display in the Calendar the new moons [Neomeniae], and from these the Luna 14 of the first month for duly celebrating the most holy Easter, in such a way that no Paschal Luna 14, counted inclusively from the new moon, ever runs ahead of the mean opposition by two or more days, but either by one day only, or falls upon the mean full moon itself, or at least follows it not long after. This we have striven to achieve in the cycle of epacts with the very greatest care and diligence we could. For we have so distributed it through the days of the Calendar that the new moons found from it very nearly follow the true and mean conjunctions of the luminaries by such an interval that the Paschal Luna 14 either precedes the mean oppositions by only one day, or coincides with them entirely, or at last occurs not

long after them. And this was done by us neither rashly nor by chance, but deliberately and with great forethought. For if the first day of the lunar month, as given by the cycle, were the one on which the astronomical tables truly place the new moon — what the computists call the kindling of the Moon [Accensio Lunae] — and not the day which usually follows the astronomical new moon by about one day, it would often happen that we should celebrate the holy Easter not only on Luna 14 (that is, one day before the full moon, together with the Jews and the Quartodeciman heretics, which would be absurd), but sometimes even, what would be more absurd, before such a Luna 14. This can be made plain as follows.

[Margin: That tables of the Moon's mean motion are useful for examining any proposed cycle.]

[Margin: Why the cycle of epacts in the new Calendar is so arranged that its new moons for the most part follow the true and mean conjunctions by such an interval that the Luna 14 either precedes the mean oppositions by one day only, or coincides with them, or at any rate occurs not long after them.]

Let there occur, for example, a mean new moon in some year at noon on the 8th of March, where the cycle sets the first Paschal new moon. Given this, let the mean full moon fall on the 23rd of March about sunrise — namely, 14 days 18 hours 22 minutes 2 seconds after the mean conjunction; for exactly that many days, hours, and fractions of hours necessarily intervene between the mean conjunction and the opposition, as we wrote at the beginning of this book. Since, then, the Luna 14 of that new moon falls by the cycle on the 21st of March, Easter will then be celebrated on the 22nd of March, if that is a Sunday — that is, a full day before the mean opposition. Nearly the same absurdity would occur if the mean new moon which happens 12 hours before noon of that same 8th of March were taken as the first day of the Paschal Moon; for its full moon will fall on the 22nd of March at sunset, and must therefore be assigned to the following 23rd. So if the 22nd were then a Sunday, Easter would again be celebrated at the mean full moon. Nor will this drawback be any better avoided if the day of the true new moon is called the first day of the Moon according to the cycle. For since it is established from astronomical calculation that the true full moon can be as much as $15\frac{1}{2}$ days and more distant from the true new moon — let the example be the true new moon in the month of February of the year 1588, which fell about noon on the 26th of February, while the true full moon fell on the 12th of March at 14 hours 14 minutes after noon; and it is evident that the interval between the two comprises $15\frac{1}{2}$ days and more, since February is then given 29 days on account of the bissextile — who does not see that, if the true new moon then fell at noon on

the 8th of March, the true full moon would occur on the 23rd at 14 hours 14 minutes after noon, and therefore, if the Sunday then fell on the 22nd of March, Easter would be celebrated before the true full moon?

[Margin: New moon and the kindling of the Moon [Accensio Lunae] are the same thing among the computists.]

This second example, which I will add, will illustrate the same matter still more clearly. In the year 1588 the true new moon occurred on the 26th of March at 14 hours 49 minutes after noon — that is, on the 27th at about 9 hours before noon — while the true full moon fell on the 11th of April at 1 hour after noon. If, then, the epact ij of that year had been assigned to the 27th of March — as some contend it should, so that the first day of the Paschal new moon found from the cycle might not differ from the day of the true new moon — the Luna 14 would fall on the 9th of April, and thus on the following 10th, since that is a Sunday, Easter would have been celebrated according to the ecclesiastical decrees, that is, before the true full moon, which would be absurd. By careful and prudent design, therefore, we assigned the epact ij not to the 27th of March but to the 29th — precisely so that the first day of its lunation might follow the 27th, the day of the true new moon.

[Margin: If the new moon of the cycle did not follow the conjunction that occurs in the heavens, Easter would often be celebrated before the full moon.]

Table of true new moons from Magini's Ephemerides compared with the new moons derived from the epact promoted forward one day (1582–1599).

The table is printed as two side-by-side blocks; each has the same five columns. The left-hand block runs 1582–1591, the right-hand block 1592–1599. Column headers (verbatim): *Anni Dñi* (Years of the Lord) | *Méfes* [Menfes] (Months) | *Nouilunia vera ex Ephemeridibus Magini* (True new moons from Magini's Ephemerides), with the sub-heading *D. H. M* (Days, Hours, Minutes) | *Epact.* (Epact) | *Nouilũia ex Epact. per vnũ diẽ furfum promotis* (New moons from the epact, promoted forward by one day).

Left-hand block (1582–1591):

| Anni
Dñi | Méfe
s | Nouilunia vera (D. H.
M) | Epact. | Nouilunia ex
Epact. |
|-------------|-----------|-----------------------------|--------|------------------------|
| 1582 | Dec. | 24. 15. 55 | xxvi | 24 |
| 1583 | Ian. | 23. 8. 0 | vii | 23 |

| Anni
Dñi | Méfe
s | Nouilunia vera (D. H.
M) | Epact. | Nouilunia ex
Epact. |
|-------------|-----------|-----------------------------|-----------------------|------------------------|
| 1583 | Feb. | 12. 21. 18 | vii | 21 |
| 1583 | Mar. | 23. 8. 16 | vii | 23 |
| 1583 | Apr. | 21. 17. 15 | vii | 21 |
| 1583 | Iun. | 19. 6. 24 | vii | 19 |
| 1583 | Oct. | 15. 4. 53 | vii | 15 |
| 1583 | Dec. | 13. 17. 15 | vii | 13 |
| 1584 | Ian. | 12. 12. 8 | xviii | 12 |
| 1584 | Feb. | 11. 5. 31 | xviii | 10 |
| 1584 | Apr. | 10. 8. 20 | xviii | 10 |
| 1585 | Apr. | 29. 6. 33 | xxix | 29 |
| 1586 | Apr. | 18. 12. 13 | x | 18 |
| 1586 | Iun. | 16. 14. 31 | x | 16 |
| 1586 | Aug. | 14. 9. 9 | x | 14 |
| 1587 | Apr. | 7. 12. 56 | xxi | 7 |
| 1587 | Mai. | 7. 5. 24 | xxi | 7 |
| 1587 | Iun. | 5. 20. 29 | xxi | 5 |
| 1587 | Iul. | 5. 10. 1 | xxi | 5 |
| 1587 | Aug. | 3. 21. 55 | xxi | 3 |
| 1587 | Sept. | 2. 8. 31 | xxi | 2 |
| 1587 | Oct. | 1. 18. 23 | xxi | 1 |
| 1587 | Oct. | 31. 4. 0 | xxi | 31 |
| 1587 | Nou. | 29. 13. 38 | xxi | 29 |
| 1589 | Oct. | 9. 3. 26 | xiii | 9 |
| 1589 | Dec. | 7. 6. 33 | xiii | 7 |
| 1590 | Feb. | 4. 4. 11 | xxiiii | 4 |
| 1590 | Sept. | 28. 5. 36 | xxiiii | 28 |
| 1590 | Nou. | 26. 15. 28 | xviii [recte: xxiiii] | 26 |
| 1590 | Dec. | 26. 6. 20 | xxiiii | 26 |
| 1591 | Feb. | 23. 6. 15 | v | 23 |
| 1591 | Dec. | 15. 11. 40 | v | 15 |

Right-hand block (1592–1599):

| Anni Dñi | Méfe
s | Nouilunia vera (D. H. M) | Epa
ct. | Nouilunia ex
Epact. |
|--------------------|-----------|--------------------------|------------|------------------------|
| 1592 | Ian. | 14. 4. 34 | xvi | 14 |
| 1592 | Feb. | 12. 19. 11 | xvi | 12 |
| 1594 | Apr. | 20. 4. 3 | viii | 20 |
| 1595 | Apr. | 9. 7. 44 | xix | 9 |
| 1595 | Iun. | 7. 12. 21 | xix | 7 |
| 1595 | Aug. | 5. 8. 36 | xix | 5 |
| 1596 | Feb. | 27. 15. 0 | j | 27 |
| 1596 | Iun. | 25. 6. 49 | j | 25 |
| 1596 | Aug. | 23. 7. 5 | j | 23 |
| 1596 | Oct. | 21. 3. 26 | j | 21 |
| 1597 | Iun. | 14. 8. 40 | xij | 14 |
| 1597 | Aug. | 12. 14. 19 | xii | 12 |
| 1597 | Sept. | 11. 4. 0 | xii | 11 |
| 1597 | Oct. | 10. 16. 46 | xii | 10 |
| 1597 | Nou. | 9. 4. 25 | xii | 9 |
| 1597 | Dec. | 8. 15. 7 | xii | 8 |
| 1598 | Feb. | 5. 11. 19 | xxiii | 5 |
| 1598 | Apr. | 5. 9. 10 | xxiii | 5 |
| 1598 | Iun. | 3. 10. 28 | xxiii | 3 |
| 1598 | Aug. | 1. 15. 55 | xxiii | 1 |
| 1598 | Aug. | 31. 7. 39 | xxiii | 31 |
| 1598 | Sept. | 29. 23. 33 | xxiii | 29 |
| 1598 | Oct. | 29. 14. 39 | xxiii | 29 |
| 1598 | Nou. | 28. 4. 29 | xxiii | 27 |
| 1598 | Dec. | 27. 16. 39 | xxiii | 27 |
| 2599 [recte: 1599] | Ian. | 26. 3. 27 | iiii | 26 |
| 1599 | Feb. | 24. 13. 24 | iiii | 24 |
| 1599 | Apr. | 24. 8. 14 | iiii | 24 |
| 1599 | Iun. | 22. 5. 8 | iiii | 22 |

| Anni Dñi | Méfe
s | Nouilunia vera (D. H. M) | Epa
ct. | Nouilunia ex
Epact. |
|----------|-----------|--------------------------|------------|------------------------|
| 1599 | Aug. | 20. 8. 15 | iiii | 20 |
| 1599 | Oct. | 18. 17. 59 | iiii | 18 |
| 1599 | Nou. | 17. 11. 15 | iiii | 17 |

Apologia adversus Maestlinum, Liber Secundus — Caput VI (continued)

Comparative table of true new moons and epactal new moons (p. 91)

This is the table to which the following page refers ("as appears in the preceding table"). It is set in **two parallel panels** across the leaf; together they form one continuous chronological list (1599–1611 in the left panel, 1615–1620 in the right). Both panels share the same five columns:

- **Anni Domini** — Years of the Lord
- **Menses** — Months
- **Nouilunia vera ex Ephemeridibus Magini** — True new moons from Magini's Ephemerides, given as *D · H · M* (day · hour · minute after noon)
- **Epacta** — Epact
- **Nouilunia ex Epactis per vnum diem sursum promotis** — New moons yielded by the epacts if these were advanced upward by one day (day of month)

[Note: the left panel's column-head is printed **Nouilnnia** and the right panel's **Nonilunia** — two distinct compositor misspellings of *Nouilunia*; transcribed as printed.]

Left panel

| Anni Domini | Men
ses | Nouilunia vera (D.H.M.) | Epac
t | Nouil. ex Epactis |
|-------------|------------|-------------------------|-----------|-------------------|
| 1599 | Dec. | 17.3.16. | iiii | 16 |
| 1600 | Ian. | 15.17.18. | xv | 15 |
| 1600 | Feb. | 14.5.9. | xv | 13 |
| 1600 | Dec. | 5.6.33. | xv | 5 |

| Anni Domini | Menses | Nouilunia vera (D.H.M.) | Epact | Nouil. ex Epactis |
|--------------------|--------|-------------------------|--------|-------------------|
| 1601 | Mar. | 4.5.53. | xxvi | 4 |
| 1602 | Feb. | 21.13.30. | vii | 21 |
| 1602 [recte: 1602] | Mar. | 23.4.19. | vii | 23 |
| 1602 [recte: 1602] | Apr. | 21.6.9. | vii | 21 |
| 1602 [recte: 1602] | Iun. | 19.9.8. | vii | 19 |
| 1603 [recte: 1603] | Feb. | 10.14.43. | xvii | 10 |
| 1603 [recte: 1603] | Mar. | 12.8.51. | xviii | 12 |
| 1603 [recte: 1603] | Apr. | 11.0.52. | xviii | 10 |
| 1603 [recte: 1603] | Mai. | 10.13.56. | xviii | 10 |
| 1603 [recte: 1603] | Iun. | 9.0.45. | xviii | 8 |
| 1603 [recte: 1603] | Iul. | 8.9.3. | xviii | 8 |
| 1603 | Aug. | 6.16.44. | xviii | 6 |
| 1603 | Oct. | 4.9.1. | xviii | 4 |
| 1603 | Dec. | 2.7.14. | xviii | 2 |
| 1605 | Iun. | 16.3.10. | x | 16 |
| 1606 | Iun. | 5.4.18. | xxi | 5 |
| 1606 | Aug. | 3.10.30. | xxi | 3 |
| 1606 | Oct. | 1.14.25. | xxi | 1 |
| 1606 | Nou. | 29.14.7. | xxi | 29 |
| 1607 | Aug. | 22.3.7. | ii | 22 |
| 1607 | Oct. | 20.11.6. | ii | 20 |
| 1607 | Dec. | 18.15.9. | ii | 18 |
| 1608 | Feb. | 15.12.51. | xiii | 15 |
| 1609 | Feb. | 4.3.42. | xxiiii | 4 |
| 1610 | Feb. | 23.3.30. | v | 23 |
| 1611 | Feb. | 12.9.2. | xvi | 12 |
| 1611 | Apr. | 12.14.29. | xvi | 12 |
| 1611 | Iun. | 10.9.14. | xvi | 10 |

Right panel

| Anni
Domini | Mens
es | Nouilunia vera (D.H.M.) | Epa
ct | Nouil. ex Epactis |
|----------------|------------|-------------------------|-----------|-------------------|
| 1615 | Feb. | 27.6.9. | j | 27 |
| 1615 | Apr. | 27.9.14. | j | 27 |
| 1615 | Iun. | 25.15.7. | j | 25 |
| 1615 | Iul. | 25.6.17. | j | 25 |
| 1615 | Aug. | 23.21.14. | j | 23 |
| 1615 | Sept. | 22.11.32. | j | 22 |
| 1615 | Oct. | 22.0.49. | j | 21 |
| 1615 | Nou. | 20.12.52. | j | 20 |
| 1615 | Dec. | 19.23.47. | j | 19 |
| 1616 | Ian. | 18.9.56. | xii | 18 |
| 1616 | Feb. | 16.19.57. | xii | 16 |
| 1616 | Oct. | 10.7.0. | xii | 10 |
| 1616 | Dec. | 8.12.50. | xii | 8 |
| 1617 | Feb. | 5.12.10. | xxiii | 5 |
| 1617 | Apr. | 5.7.2. | xxiii | 5 |
| 1617 | Sept. | 29.7.45. | xxiii | 29 |
| 1617 | Nou. | 27.19.8. | xxiii | 27 |
| 1617 | Dec. | 27.11.27. | xxiii | 27 |
| 1618 | Feb. | 24.16.3. | iiii | 24 |
| 1618 | Apr. | 24.8.10. | iiii | 24 |
| 1618 | Dec. | 16.14.22. | iiii | 16 |
| 1619 | Ian. | 15.8.27. | xv | 15 |
| 1619 | Feb. | 14.0.34. | x[v?
] | 13 |
| 1619 | Mar. | 15.13.50. | xv | 15 |
| 1619 | Apr. | 14.0.30. | x[v?
] | 13 |
| 1619 | Mai. | 13.9.0. | xv | 13 |
| 1619 | Iun. | 11.16.22. | xv | 11 |

| Anni
Domini | Mens
es | Nouilunia vera (D.H.M.) | Epa
ct | Nouil. ex Epactis |
|----------------|------------|-------------------------|-----------|-------------------|
| 1619 | Aug. | 9.7.24. | xv | 9 |
| 1619 | Oct. | 7.5.14. | xv | 7 |
| 1619 | Dec. | 5.13.56. | xv | 5 |
| 1620 | Ian. | 4.8.57. | xxvi | 4 |
| 1620 | Feb. | 3.4.1. | xvi | 3 |

[Margin: Why the epacts in the Calendar are not advanced upward by one day, so as to show the new moons earlier than they now do.] If you object that the epact ought to have been prefixed to the 28th day rather than the 29th, so that the new moon it gives would fall short of the true one by a single day and not by two, I answer that there was no reason to do so. For if that epact were moved from 29 March to the 28th, then every other epact would likewise have to be advanced upward by one day, since they cannot be arranged in the Calendar in any other order than the one we have used, so that the lunations may be constituted alternately of 30 and 29 days, as the reckoning requires. And if this advancing were adopted, the new moons of many epacts would run ahead of the true conjunctions by a whole day, as appears in the preceding table.

[Margin: Explanation of the preceding table.] In the first column of that table the years of the Lord are set down; in the second, the months; in the third, the days, hours, and minutes after noon at which the Ephemerides of Giovanni Antonio Magini [Giovanni Antonio Magini] show the true new moons; in the fourth, the epacts; and in the fifth, the new moons that those epacts would exhibit if they were advanced by one day. Here it is plainly established that these latter new moons are indicated by the epacts before the former ones occur in the sky — and indeed, in certain years, such as November 1598, December 1599, April 1603, June 1603, October 1615, February 1619, and June 1619, this anticipation amounts to more than a whole day, which would be quite absurd. We have here left out those true new moons that fall at noon itself, or one or two hours after noon, on the same days on which the epacts would show them, and have noted down only those that follow the epactal new moons by several hours. And yet, as you see, within a span of less than 40 years there would occur 128 epactal new moons — if the epacts were advanced by one day — earlier than the true conjunctions of the luminaries exist in the sky. This would run counter to the practice of all the nations among whom the lunar cycle has been in use. The epacts, therefore, are not to be advanced upward by one day; and accordingly epact 2 is rightly assigned to 29 March and not to the 28th.

[Margin: That in the equation-table of the epacts the capital letter D was rightly assigned for the year 1582 after the correction, not the capital letter E.] The same absurdities would follow if anyone, leaving the epacts in the Calendar as we have laid them out, were to construct the equation-table differently — namely by prefixing to the year 1582, after the correction, the capital letter E, as in the expanded table it answers to golden number 12 of the year 1588; whereupon epact 2 would stand in the line to which the capital letter E is assigned, which epact is one day higher in the Calendar than epact 2. The same absurdities, I say, would follow, because then the new moons would be shown by the epacts one day earlier in the same way — exactly as if the epacts had been advanced by one day. Rightly, therefore, in the equation-table did we assign the capital letter D to the year 1582 after the removal of the ten days, and not the capital letter E, lest the new moons be indicated in the Calendar by the epacts earlier than is proper. In the same way we shall confirm that the other letters have been fittingly prefixed to their several years in the equation-table, lest — if the equation were set up otherwise — the epactal new moons should fall on the true new moons, or run ahead of them, instead of following after them, so that the Paschal 14th moons may always, so far as can be, forestall the mean full moons by a single day only.

[Margin: That around the time of the Council of Nicaea Easter frequently fell on the 14th moon, because the new moons were shown by the golden numbers too early.] Again, that it is not expedient for the new moons to coincide with the mean conjunctions of the cycle, or with the golden numbers, but rather more in keeping with ecclesiastical use that they should follow after them — this the cycle of the golden number, once inscribed in the Calendar, can plainly teach us. For since, around the time of the Council of Nicaea, that cycle indicated the new moons on nearly the same days on which they occurred in the sky, the result was that very often Easter then fell on the 14th moon — that is, was celebrated before the mean opposition, contrary to the decrees of that same Council. And this is evident from the table set out below.

Table of Easters celebrated on or before the mean full moon (p. 92)

Columns: **Anni Dñi** (Years of the Lord) · **Aurei num.** (Golden number) · **Literæ Dñic.** (Dominical letters) · **Pascha** (Easter day) · **Oppositiones mediæ Paschales** (Mean Paschal oppositions, *D · H · M*).

| Anni Dñi | Aurei
num. | Literæ Dñic. | Pascha | Oppos. mediæ Paschales
(D.H.M.) |
|----------|---------------|--------------|----------|------------------------------------|
| 323 | 1 | E | 6. Apr. | 6. 22. 45. |
| 326 | 4 | B | 3. Apr. | 3. 13. 54. |
| 330 | 8 | D | 19. Apr. | 19. 2. 37. |
| 346 | 5 | E | 23. Mar. | 23. 15. 16. |
| 350 | 9 | G | 8. Apr. | 8. 3. 58. |
| 370 | 10 | C | 28. Mar. | 28. 5. 19. |
| 394 | 15 | A | 2. Apr. | 2. 5. 23. |
| 441 | 5 | E | 23. Mar. | 23. 1. 58. |
| 475 | 1 | E | 6. Apr. | 6. 11. 4. |
| 495 | 2 | A | 26. Mar. | 26. 12. 25. |

[Margin: Explanation of the table above. Why in the celebration of Easter there were so many dissensions between the Eastern and the Western Church.] In the first column are noted the years in which Easter was celebrated before the mean full moon — or at any rate not after it, but on those days that hold the full moon some hours after noon. In the second column are contained the golden numbers current in those years; in the third, the Dominical letters; in the fourth, the days of Easter; and in the fifth, finally, the mean Paschal oppositions. Here you see that this error was committed, within a span of 173 years, in 10 of those years — so that it is no wonder that so many discords over the celebration of Easter arose, even after the Council of Nicaea, between the Eastern and the Western Church, right down to the time of the Emperor Justinian, when the cycle of the golden number was inscribed in the Calendar by the Abbot Dionysius [Dionysius Exiguus]. At that time the golden numbers already showed the new moons and the Paschal 14th moons more correctly than in the days of the Council of Nicaea — that is, later than they occurred in the sky.

[Margin: That many errors in Easter would arise if the epacts indicated the new moons earlier than they do by the prescription of the new Calendar, especially in the year 1598.] To this may be added that, unless the new moons of the epacts followed after the conjunctions of the luminaries in the manner in which they are shown in the Calendar by the epacts (with the equation-table applied), notable and intolerable errors would very often arise in the celebration of Easter. The clearest example of this is the year 1598, which Maestlin [Michael Mästlin] and several others bring forward to show that the epacts do not exhibit the legitimate Paschal 14th moons. For if, according to the opinion of those who hold that the

new moons are indicated by the epacts later than the matter warrants, the individual epacts were advanced upward by one day each — or, what comes to the same thing, if the equation-table were so set up that, in place of the line of the capital letter D, the line of the capital letter E were taken in the expanded table — then the Paschal new moon of that year would fall on 5 April, where epact 23 of the same year would then stand if that advancing of the epacts were made; or where epact 24 is placed, which would indicate the new moons of that same year if the equation-table were constructed otherwise, namely so that the year 1582, after the correction, had the capital letter E prefixed to it and not the capital letter D. For the preceding new moon, which would then fall on the 7th day of March, would not be Paschal, since it falls outside the Paschal limits, as is clear from what we wrote in Chapter 1 of the previous book. Granting this, Easter would be celebrated on 19 April — that is, on the first Sunday after the 14th moon, which would then fall on the 18th. Since, therefore, in that year the mean opposition occurs on the 20th at hour 9, minute 20 after noon, but the true full moon on the 20th at hour 22, minute 39 after noon, the solemnity of Easter would run ahead of both the true and the mean full moon by nearly two days — which is contrary to the sacred Canons and Councils. And the same can be shown to happen in several other years.

[Margin: That Easter for the year 1598 was rightly celebrated by the prescription of the new Calendar, against Maestlin, Giovanni Antonio Magini, and several others.] Therefore, lest such foul and shameful errors be admitted in a solemnity of such importance, the epacts have by excellent counsel been so arranged in the Calendar, and their equation so instituted, that the epact of the year 1598 is 23, assigned to 8 March. For in this way the Paschal new moon will then fall on 8 March, and its 14th day on the 21st; and accordingly Easter will be celebrated on the following day, the 22nd, which is a Sunday — the day, namely, on which the 15th moon falls, that then coincides with the mean opposition, since this occurs on the 21st at hour 20, minute 36 after noon, that is, on the 22nd at nearly 4 hours before noon. Nor does it stand in the way of Easter being duly celebrated then that the true full moon occurs on the 22nd at hour 9 after noon; for the Church in this matter subordinates the true motions to the mean, as we showed in Chapter 4 of the first book.

[Margin: That Magini wrongly, in his Ephemerides, throws the Easter of 1598 back from 22 March to the 29th day.] So that I wonder what came into the mind of Giovanni Antonio Magini — a mathematician otherwise most eminent in our age — that in that year, in his Ephemerides, he should throw Easter back to 29 March on account of that true opposition. For if that March new moon is the

Paschal one, as it truly is — even on his own showing, since epact 23 exhibits it on 8 March and its 14th day falls on the 21st — then the Church, if it means to abide by the decrees of the Councils and Fathers and by long-standing custom, cannot but celebrate Easter on the 22nd, since that is the Sunday next following the 14th moon which the cycle exhibits. For we do not read that the Church has ever deferred Easter past the 15th moon — should this fall on a Sunday — into another week, namely the fourth, and so onto the 22nd moon, since this would conflict with the decrees of the Church. Nor can he say, in his own defence, that the Church ought to throw that new moon back to 9 March, so that the 14th moon would fall on 22 March, that is, on the Lord's day, and Easter be accordingly transferred to the following Lord's day, the 29th. This, I say, he cannot maintain; for then either epact 23, with all the others, would have to be advanced downward by one day, or — what comes to the same thing — in place of epact 23 epact 22 would have to be taken, and therefore for the year 1582 the capital letter C would have to be prefixed in the equation-table. And this is absurd, since on this reckoning the new moons of the cycle would follow the celestial conjunctions too late, seeing that in most cases they appear, from the epacts as arranged in the new Calendar, to be shown later than is proper. What, then, would they say if the new moons were still further postponed by a whole day? It is settled, then, that Easter in the year 1598 was, by the use of the Church, rightly celebrated on 22 March, and by no means to be deferred to the 29th, as Magini would have it. This lapse of a most learned man I would most gladly have passed over in silence — especially since he departed from the prescription somewhat more through imprudence than through obstinacy — had not his authority drawn many others, and Maestlin himself in particular, into the same mistake.

[Margin: That even though the epactal new moons in the Calendar are for the most part postponed, many of them nonetheless agree with the celestial new moons.] Since these things are so, who will dare to accuse or reproach us — unless one who is wholly ignorant of the ecclesiastical practice in the use of the cycles — for having made the new moons that are to be found by the epacts follow after the new moons found by the astronomical tables? We did this precisely so as not to fall so often into the error we have described — that is, so as not to celebrate Easter, so frequently, before the mean opposition, as used to happen in the days of the Council of Nicaea. And this the more, since not even so could we altogether escape it, seeing that our own cycle of the epacts does sometimes present Easter for celebration before the well-nigh mean opposition (although this happens very rarely — at most once or twice in a span of 3000 years), and that many of the new moons shown by that same cycle in the Calendar do agree with the celestial new moons — all those, namely, that we said

above would fall before the true conjunctions if the individual epacts were advanced day by day toward the beginnings of the months. Certainly, if anyone wishes to be so severe a judge of the epacts, he ought to reflect that no cycle described in a Calendar can avoid every drawback — such that its new moons should neither disagree with the celestial new moons, nor its 15th moons at times run ahead of the true or mean oppositions. Witness the cycle of the golden number approved by the Council of Nicaea, which, in showing the new moons around the time of that Council on nearly the same days on which they occurred in the sky, would often have its 14th moon run ahead of the mean opposition, and therefore not rarely had Easter celebrated before the mean opposition, as we said a little earlier. Witness also our own cycle of the epacts, which — while it takes care that its 14th moons should not forestall the mean oppositions by two days — for the most part indicates new moons later than the celestial conjunctions.

[Margin: That no cycle can fully correspond to the celestial motions, for various reasons.] There are, however, many reasons why no cycle can wholly correspond to the celestial motions. First, because in the lunations of the cycle, which are constituted alternately of 30 and 29 days, no small hours are neglected, since any mean lunation does not contain those 30 or 29 days exactly, but 29 days and nearly 12 hours, 44 minutes, 3 seconds, 11 thirds. Next, since in the lunations of the cycle no account is taken of...

[Margin: In a bissextile year the lunation sometimes comprises 31 days.]

and because no account is taken of the intercalary days in bissextile years, it happens that a lunation which ought to be only 29 days long sometimes contains 30; indeed — what is more — a lunation which ought to embrace 30 days is made to be 31.

Third: because, on account of the equation of both years — the solar and the lunar — one must pass from one line of the table of expanded epacts to another, the lengths of the lunations of January and February are altered by no small amount.

Fourth: because the mean conjunction of the luminaries — with which the cycle ought to agree more closely than with the true conjunctions — can precede or follow the true conjunction by nearly 14 hours; so that it ought not to seem surprising if the new moons of the cycle diverge from the true conjunctions. This variation is increased by the variety of meridians: because of it, the same conjunction which at Rome, for example, occurs exactly at noon must necessarily

occur for the eastern peoples several hours after noon, and for the western peoples before noon.

[Margin: New moons placed too late cause Easter to be celebrated in the last month.]

Although it sometimes happens, as we have said, that the paschal 14th Moon reckoned by the epacts anticipates the mean opposition by nearly two days, the new moons were nevertheless not for that reason thought worth postponing any further, both because they would then stand too far from the celestial new moons and would be shown in the calendar later than is proper, and also because that anticipation of the 14th Moon occurs very rarely, and the Dominical letter frequently corrects it — so that even in that case Easter is not always celebrated before the mean opposition, since the Sunday does not fall on that opposition but follows it. There is the further point that Easter, if the new moons were postponed more, would not rarely be celebrated in the last, that is, the twelfth month. For it could then happen that some mean full moon fell on the very day of the equinox, or preceded it, and that the lunation would on that account belong to the last month and not to the first (since the full moon of the first month must follow the day of the equinox: for the 14th Moon of that same first month, which precedes the full moon by one day, must never go before the equinox day, as we showed above); yet the cycle, thus postponed, would present that lunation as the paschal one — namely, when its new moon fell on 8 March and the 14th Moon on the 21st, on the equinox itself. And this results solely from the postponement of the new moons. For it comes about from this that the mean new moon — anticipating the cycle's paschal new moon [neomenia] by two days or more — may have its full moon on the very day of the equinox, or before it, and must therefore be assigned to the last month, even though the cycle ascribes that new moon to the first month.

[Margin: Bede: the Moon is not to be called "first" on the day it is conjoined with the Sun, even if the conjunction occurs 23 hours before sunset, the point at which the day begins.]

[Margin: Campanus: the Moon is not to be called "first" on the very day of conjunction, but on the following day.]

[Margin: For Theophilus of Alexandria and Saint Cyril, the 14th Moon of the cycle is the one which by the astronomical tables is the 16th from the conjunction.]

Now, that the new moons found by the cycle ought rather to follow than to accompany the conjunctions of the Sun and Moon which occur in the heavens,

we can also confirm by the authority of the weightiest writers. For the Venerable Bede [Beda] — a man very well practised in this matter — asserts, in his book *On the Reckoning of Time* [*De Ratione temporum*] chapter 41, that the Moon is not to be called "first" on the day on which it is conjoined with the Sun, but on the following day, even though the conjunction occurs 23 hours before sunset, the point at which the day begins for him. You see, then, that the Moon can be called "first" according to the cycle, in the judgement of Bede — a most diligent writer on the correct celebration of Easter — even though the Sun has already been conjoined with the Moon for a whole day and more. The same thing is prescribed by Campanus [Campanus of Novara] in his *Greater Computus* [*Computus Maior*] chapter 28, in these words: "*The Moon ought to be called first not on the very day of its conjunction with the Sun, but on the next following day, when its beginning is already starting to appear.*" Here he plainly teaches that the cycle's new moon ought to follow the conjunction of the Sun with the Moon by a whole day. In this same opinion were most of the ancient Fathers, and especially Theophilus of Alexandria, the bishop, whose authority in this matter of Easter carried so much weight with the Roman pontiffs that for many years the Church celebrated Easter according to his computation and prescription — as is clear from the letters of the great Pope Leo [Leo I] to the Emperor Marcian and the Empress Eudoxia. Now this Theophilus, as Saint Cyril — his successor in the bishopric — reports (and as Paul of Middelburg [Paulus Middelburgensis], Johannes Stöffler [Ioann. Stoflerinus], and other computists also testify), judged that the Moon which by the cycle and by the usage of the Church is to be called the 14th is the one which others, from the astronomical tables, called the 16th from the conjunction; and this very opinion Saint Cyril himself strives with all his might to confirm. From which it is sufficiently clear that he did not take the first Moon, for the celebration of Easter, on the day on which the Sun is conjoined with the Moon, but nearly two days afterward. And so it has not turned out unhappily with our epacts, since they have been so distributed in the calendar that their new moons, for the most part, follow the mean conjunctions — now by fewer hours, now by more, as the nature of the cycle brings about and as the arrangement of alternating lunations of 30 and 29 days allows: seeing that in this matter we have both imitated those ancient Fathers, and, by keeping that arrangement of the epacts, have brought it about that Easter is celebrated at a more fitting time, as is clear from what we have said.

[Margin: The epacts of the new calendar rightly indicate the new moons after the mean conjunctions.]

[Margin: In the political solar year a day is sometimes called the first which ought more truly to be called the last; and a day is sometimes called the last of a given month which ought more truly to be the first of the following month.]

Finally, that it is neither absurd nor new nor unusual in the Church of God to call a Moon "first" — that is, to call it the first day of the lunar month — when the conjunction of the luminaries has already preceded in the heavens by a whole day and more, so that it is really the second, or the second day, of the lunar month: anyone will easily persuade himself of this, if he considers a little more carefully that in the political solar year, too, a day is sometimes called "first" which ought more truly to be called the last of the year; and likewise that in the months of the solar year a day is sometimes called the last of one month which in reality ought to be the first of the next following month. This will become clear as follows. Suppose the Sun is at exactly noon, on the first day of January, say, in the first year after a bissextile, at some fixed point of the zodiac. It is agreed that, after 365 days are completed, it cannot return to the same point at the noon of that same first day, but will return to it after about 6 hours — hours which in common years are neglected — at sunset; in the second year, after about 12 hours, around the following midnight; and in the third, after 18 hours, that is, at the sunrise of the second day of January. This second day, then, ought more properly to be called the first day of January, because the Sun has by then completed the period of its course; and yet we still name it the first day of the year — the day which ought more truly to be reckoned the last of the preceding year. Again, suppose we set the Sun on the first day of, say, March, in the third year after a bissextile, at 6 hours before noon — that is, about sunrise — holding some fixed point in the heavens: it follows that in the next year, the bissextile,

because of the intercalary day added, it returns to the same point on the last day of February — which then contains 29 days — not at sunrise but nearly 6 hours later, that is, about noon. This last day of February, then, would rightly be called the first day of March, because on it the Sun has returned to the same point of the heavens at which we had placed it on the first day of March of the preceding year; and yet we still call that same day the first of March, though it would more truly be the second day of March. And so, as you see, we are compelled at times to call some day in the political solar year "first" or "second" which is nevertheless 6, or 12, or 18 hours short of the true first or second; and we tolerate an error of this kind until, when four years are completed, it is corrected by the intercalation of one day. By the same reasoning, therefore, in the political lunar year — on account of the hours and fractions of hours omitted in a single lunation, and on account of the day added in the bissextile year, and finally on account of other

causes — the Church is compelled sometimes to declare a Moon "first" which is more truly the second, and it tolerates this error until it is compensated by the embolisms and the other equations of the Moon.

But before we come to the last chapter of this book, in which Maestlin's arguments are to be resolved, I judge it will be worth the effort if in this place I set out a certain simple and easy method by which anyone may, without great labour, investigate the mean new moons and full moons by means of the epacts. This method, although it is not so exact as the one drawn from the tables of the mean motions, nevertheless departs but little from the truth; it is handed down in the Prutenic Tables and in the tables of Giovanni Antonio Magini [Ioann. Antonii Magini], and is carefully described by Paul of Middelburg in his *Paulina* — so that in this business of Easter we may safely rely on it. For by this method it will come about that we shall have ready to hand the mean opposition of the luminaries, whenever there is need, or whenever the cycle of epacts is to be examined to see whether or not it correctly presents the paschal 14th Moon: especially since in the next chapter we shall be compelled to compute a great many mean paschal oppositions, in order to repel the calumnies and cavils of Maestlin — as was also done by us a little earlier, in examining the golden number of the Council of Nicaea.

[Margin: How the epact of years and of months is gathered and reduced into tables, for investigating the new moons and full moons.]

Besides the epacts, then, which have been explained so far — which arise from the days by which the lunar year is exceeded by the solar, when each year is reckoned in whole days and the hours and their fractions are neglected — the astronomers consider other, more refined epacts, in which the hours too, and the fractions of hours, are observed; and these are the days, hours, and fractions of hours which, in any given year or even month, remain over and above the whole mean lunations without completing one whole mean lunation. These are called the epacts of years and of months.

And so, if from the solar year of 365 days you subtract the lunar year — that is, 354 days 8 hours 48 minutes 38 seconds 12 thirds — the remainder will be the epact of one common year: 10 days 15 hours 11 minutes 21 seconds 48 thirds. The epact of a bissextile year will be 11 days 15 hours 11 minutes 21 seconds 48 thirds. From this you will easily make up the epacts of two, three, or four common years, and so on up to 100, by continually adding the epact of one year — always casting out a whole lunation, that is, 29 days 12 hours 44 minutes 3 seconds 11 thirds, whenever the sum made up is greater — and by adding besides

one day in the bissextile years, which are the years 4, 8, 12, 16, and the rest that are counted by fours, as you see has been done in the following table of 100 expanded years.

By the same reasoning you will compose, from the continual addition of the epacts of 100 years, the epacts of 200, 300, 400, and so on, of the following centenary years, always rejecting a whole lunation whenever it can be done: which is seen in the other table, of collected years up to 4000. But to each of these epacts of collected years, taken by hundreds, there has been added the Epoch of Christ (commonly called the "radix of Christ"), which, on Magini's authority, contains 16 days 18 hours 12 minutes 30 seconds. We have chosen this radix rather than the one which in the Prutenic Tables contains 17 days 5 hours 27 minutes 30 seconds, or the one which Paul of Middelburg sets at 16 days 16 hours 41 minutes 9 seconds, since it is in a manner midway between these two. But if anyone wishes to extend this table further, let him continually add 25 days 4 hours 30 minutes 33 seconds, always casting out a lunation of 29 days 12 hours 44 minutes 3 seconds 11 thirds whenever it can be cast out.

Again, if from the 31 days of the month of January we take away a whole lunation of 29 days 12 hours 44 minutes 3 seconds 11 thirds, the remainder will be the epact of January: 1 day 11 hours 15 minutes 56 seconds 49 thirds. If to these you add the days of the following months — again casting out, whenever it can be done, a whole lunation, and in the bissextile year assigning 29 days to February — you will build up the epacts of all the months, both of the common year and of the bissextile, as you see has been done in the double table of the months.

Lastly, if from the half lunar month of 14 days 18 hours 22 minutes 1 second 36 thirds you proceed by the continual addition of the half month, casting nothing out, until you reach the fourth conjunction of 118 days 2 hours 56 minutes 13 seconds — as may be seen in the adjoining little table, which the astronomers call the Table of the Revolutions of the New and Full Moons — the tables will thereby be composed by which both the mean new moons and the mean full moons will be reckoned with little trouble, as we shall shortly say. And it is enough to reach the fourth conjunction, because the sum to be subtracted from these revolutions can never be greater than the number of this fourth conjunction. Moreover, in all these tables, which we have transferred here from Giovanni Antonio Magini, the thirds have been neglected — yet in such a way that, in composing the tables, whenever there were more than 30 thirds in the sum, 1 second was taken.

TABLES FOLLOW FOR CALCULATING THE NEW MOONS AND FULL MOONS

Table of the epacts of the 100 expanded years [Anni 100. Expansi — Epactae].
(D = days, H = hours, M = minutes, S = seconds.) Printed across the page in three
side-by-side blocks (years 1–42, 43–84, 85–100); reproduced here as one
continuous run.

| Year | D | H | M | S |
|------|----|----|----|----|
| 1 | 10 | 15 | 11 | 22 |
| 2 | 21 | 6 | 22 | 24 |
| 3 | 2 | 8 | 50 | 2 |
| 4 | 14 | 0 | 1 | 24 |
| 5 | 24 | 15 | 12 | 46 |
| 6 | 5 | 17 | 40 | 5 |
| 7 | 16 | 8 | 51 | 27 |
| 8 | 28 | 0 | 2 | 49 |
| 9 | 9 | 2 | 30 | 7 |
| 10 | 19 | 17 | 41 | 29 |
| 11 | 0 | 20 | 8 | 48 |
| 12 | 12 | 11 | 20 | 10 |
| 13 | 23 | 2 | 31 | 32 |
| 14 | 4 | 4 | 58 | 50 |
| 15 | 14 | 20 | 10 | 12 |
| 16 | 26 | 11 | 21 | 34 |
| 17 | 7 | 13 | 48 | 53 |
| 18 | 18 | 5 | 0 | 15 |
| 19 | 28 | 20 | 11 | 37 |
| 20 | 10 | 22 | 38 | 55 |
| 21 | 21 | 13 | 50 | 17 |
| 22 | 2 | 16 | 17 | 36 |
| 23 | 13 | 7 | 28 | 58 |
| 24 | 24 | 22 | 40 | 20 |
| 25 | 6 | 1 | 7 | 38 |

| Year | D | H | M | S |
|------|----|----|----|----|
| 26 | 16 | 16 | 19 | 0 |
| 27 | 27 | 7 | 30 | 22 |
| 28 | 9 | 9 | 57 | 41 |
| 29 | 20 | 1 | 9 | 2 |
| 30 | 1 | 3 | 36 | 21 |
| 31 | 11 | 18 | 47 | 43 |
| 32 | 23 | 9 | 59 | 5 |
| 33 | 4 | 12 | 26 | 24 |
| 34 | 15 | 3 | 37 | 45 |
| 35 | 25 | 18 | 49 | 7 |
| 36 | 7 | 21 | 16 | 26 |
| 37 | 18 | 12 | 27 | 48 |
| 38 | 29 | 3 | 39 | 10 |
| 39 | 10 | 6 | 6 | 28 |
| 40 | 21 | 21 | 17 | 50 |
| 41 | 2 | 23 | 45 | 9 |
| 42 | 13 | 14 | 56 | 31 |
| 43 | 24 | 6 | 7 | 53 |
| 44 | 6 | 8 | 35 | 12 |
| 45 | 16 | 23 | 46 | 33 |
| 46 | 27 | 14 | 57 | 55 |
| 47 | 8 | 17 | 25 | 14 |
| 48 | 20 | 8 | 36 | 36 |
| 49 | 1 | 11 | 3 | 55 |
| 50 | 12 | 2 | 15 | 16 |
| 51 | 22 | 17 | 26 | 28 |
| 52 | 4 | 19 | 53 | 57 |
| 53 | 15 | 11 | 5 | 19 |
| 54 | 26 | 2 | 16 | 41 |
| 55 | 7 | 4 | 43 | 59 |
| 56 | 18 | 19 | 55 | 21 |

| Year | D | H | M | S |
|------|----|----|----|----|
| 57 | 29 | 11 | 6 | 43 |
| 58 | 10 | 13 | 34 | 2 |
| 59 | 21 | 4 | 45 | 24 |
| 60 | 3 | 7 | 12 | 42 |
| 61 | 13 | 22 | 24 | 4 |
| 62 | 24 | 13 | 35 | 26 |
| 63 | 5 | 16 | 2 | 45 |
| 64 | 17 | 7 | 14 | 7 |
| 65 | 27 | 22 | 25 | 29 |
| 66 | 9 | 0 | 52 | 47 |
| 67 | 19 | 16 | 4 | 9 |
| 68 | 1 | 18 | 31 | 28 |
| 69 | 12 | 9 | 42 | 50 |
| 70 | 23 | 0 | 54 | 12 |
| 71 | 4 | 3 | 21 | 30 |
| 72 | 15 | 18 | 32 | 52 |
| 73 | 26 | 9 | 44 | 14 |
| 74 | 7 | 12 | 11 | 33 |
| 75 | 18 | 3 | 22 | 55 |
| 76 | 0 | 5 | 50 | 13 |
| 77 | 10 | 21 | 1 | 35 |
| 78 | 21 | 12 | 12 | 57 |
| 79 | 2 | 14 | 40 | 16 |
| 80 | 14 | 5 | 51 | 38 |
| 81 | 24 | 21 | 3 | 0 |
| 82 | 5 | 23 | 30 | 18 |
| 83 | 16 | 14 | 41 | 40 |
| 84 | 28 | 5 | 53 | 2 |
| 85 | 9 | 8 | 20 | 20 |
| 86 | 19 | 23 | 31 | 43 |
| 87 | 1 | 1 | 59 | 1 |

| Year | D | H | M | S |
|------|----|----|----|----|
| 88 | 12 | 17 | 10 | 23 |
| 89 | 23 | 8 | 21 | 45 |
| 90 | 4 | 10 | 49 | 4 |
| 91 | 15 | 2 | 0 | 26 |
| 92 | 26 | 17 | 11 | 47 |
| 93 | 7 | 19 | 39 | 6 |
| 94 | 18 | 10 | 50 | 28 |
| 95 | 29 | 2 | 1 | 50 |
| 96 | 11 | 4 | 29 | 9 |
| 97 | 21 | 19 | 40 | 30 |
| 98 | 2 | 22 | 7 | 49 |
| 99 | 13 | 13 | 19 | 11 |
| 100 | 25 | 4 | 30 | 33 |

Table of the Revolutions of the New and Full Moons [Reuolutiones Nouiluniorum, Plenilunorumque]. (Rows alternately labelled *opp.* = opposition / full moon, *con.* = conjunction / new moon; D H M S as above.) Set in the lower right of the leaf, beside the year-table.

| | D | H | M | S |
|------|-----|----|----|----|
| opp. | 14 | 18 | 22 | 2 |
| con. | 29 | 12 | 44 | 3 |
| opp. | 44 | 7 | 6 | 5 |
| con. | 59 | 1 | 28 | 6 |
| opp. | 73 | 19 | 50 | 8 |
| con. | 88 | 14 | 12 | 10 |
| opp. | 103 | 8 | 34 | 11 |
| con. | 118 | 2 | 56 | 13 |

[Caput VI, continued — Table of Epacts of the Collected Years, with the Radix of Christ and the monthly epacts for common and bissextile years]

Table of epacts for the collected hundreds of years, reckoned from the Radix of Christ, together with the monthly epacts.

The table is set in three panels across the page. In every panel the four sub-columns are **D** (days), **H** (hours), **M** (minutes), **S** (seconds).

Panel 1 — Collected years by hundreds [Anni collecti per 100], from the Radix of Christ [Radix Christi]. Radix of Christ = D 16 · H 18 · M 12 · S 30.

| Years | D | H | M | S |
|-------|----|----|----|----|
| 100 | 12 | 9 | 59 | 0 |
| 200 | 8 | 1 | 45 | 30 |
| 300 | 3 | 17 | 31 | 59 |
| 400 | 28 | 22 | 2 | 32 |
| 500 | 24 | 13 | 49 | 2 |
| 600 | 20 | 5 | 35 | 32 |
| 700 | 15 | 21 | 22 | 1 |
| 800 | 11 | 13 | 8 | 31 |
| 900 | 7 | 4 | 55 | 0 |
| 1000 | 2 | 20 | 41 | 31 |
| 1100 | 28 | 1 | 12 | 3 |
| 1200 | 23 | 16 | 58 | 33 |
| 1300 | 19 | 8 | 45 | 3 |
| 1400 | 15 | 0 | 31 | 33 |
| 1500 | 10 | 16 | 18 | 2 |
| 1600 | 6 | 8 | 4 | 32 |
| 1700 | 1 | 23 | 51 | 2 |
| 1800 | 27 | 4 | 21 | 35 |
| 1900 | 22 | 20 | 8 | 4 |
| 2000 | 18 | 11 | 54 | 34 |
| 2100 | 14 | 3 | 41 | 4 |

| Years | D | H | M | S |
|-------|---|----|----|----|
| 2200 | 9 | 19 | 27 | 34 |
| 2300 | 5 | 11 | 14 | 3 |
| 2400 | 1 | 3 | 0 | 33 |

Panel 2 — Collected years by hundreds [Anni collecti per 100], continued.

| Years | D | H | M | S |
|-------|----|----|----|----|
| 2500 | 26 | 7 | 31 | 6 |
| 2600 | 21 | 23 | 17 | 36 |
| 2700 | 17 | 15 | 4 | 5 |
| 2800 | 18 | 6 | 50 | 35 |
| 2900 | 8 | 22 | 37 | 5 |
| 3000 | 4 | 14 | 23 | 35 |
| 3100 | 0 | 6 | 10 | 5 |
| 3200 | 25 | 10 | 40 | 38 |
| 3300 | 21 | 2 | 27 | 8 |
| 3400 | 16 | 18 | 13 | 37 |
| 3500 | 12 | 10 | 0 | 7 |
| 3600 | 8 | 1 | 46 | 37 |
| 3700 | 3 | 17 | 32 | 7 |
| 3800 | 28 | 22 | 2 | 40 |
| 3900 | 24 | 13 | 49 | 10 |
| 4000 | 20 | 5 | 35 | 40 |

Panel 3a — Common years [Anni communes]: monthly epacts.

| Month [Mens.] | D | H | M | S |
|---------------|----|----|----|----|
| Jan. [Ian.] | 1 | 11 | 15 | 57 |
| Feb. | 29 | 11 | 15 | 57 |
| Mar. | 1 | 9 | 47 | 50 |
| Apr. | 1 | 21 | 3 | 47 |
| May [Mai.] | 3 | 8 | 19 | 44 |
| Jun. [Iun.] | 3 | 19 | 35 | 41 |
| Jul. [Iul.] | 5 | 6 | 51 | 38 |

| Month [Mens.] | D | H | M | S |
|---------------|----|----|----|----|
| Aug. | 6 | 18 | 7 | 35 |
| Sept. | 7 | 5 | 23 | 31 |
| Oct. | 8 | 16 | 39 | 28 |
| Nov. [Nou.] | 9 | 3 | 55 | 25 |
| Dec. | 10 | 5 | 11 | 22 |

Panel 3b — Bissextile (leap) years [Anni Bissext.]: monthly epacts.

| Month [Mens.] | D | H | M | S |
|---------------|----|----|----|----|
| Jan. [Ian.] | 1 | 11 | 15 | 57 |
| Feb. | 0 | 22 | 31 | 54 |
| Mar. | 2 | 9 | 47 | 50 |
| Apr. | 2 | 21 | 3 | 47 |
| May [Mai.] | 4 | 8 | 19 | 44 |
| Jun. [Iun.] | 4 | 19 | 35 | 41 |
| Jul. [Iul.] | 6 | 6 | 51 | 38 |
| Aug. | 7 | 18 | 7 | 35 |
| Sept. | 8 | 5 | 23 | 31 |
| Oct. | 9 | 16 | 39 | 28 |
| Nov. [Nou.] | 10 | 3 | 55 | 25 |
| Dec. | 11 | 15 | 11 | 22 |

[Margin: How the mean new and full moons are to be found from the epact tables.]

The use of the tables just set out, for finding the mean new and full moons, is as follows. Gather into a single sum three quantities: the epacts of the elapsed complete hundreds of years [anni collecti per 100], the epacts of the completed individual years [anni expansi], and finally the epact of the month immediately preceding the one in which the mean new moon or full moon is sought — just as is customary in astronomical tables. Then, in the table of revolutions, cast out this sum by the next-lower entry standing under the heading of the conjunctions (marked by the syllable *Cor.*, for *Coniunctio*) or of the oppositions (marked by the syllable *Opp.*, for *Oppositio*), according as it is the mean conjunction or the mean

opposition that is being sought. The remainder will give the time of the conjunction or opposition in question.

For example. Suppose we wish to find the new moon of the month of September in the year 1725. The epacts of the 1700 years are 1 day, 23 hours, 51 minutes, 2 seconds. The epacts of the 22 completed years are 2 days, 16 hours, 17 minutes, 36 seconds. And the epact of the completed month of August in a common year is 6 days, 18 hours, 7 minutes, 35 seconds, as is plain from the tables above. These make a sum of 11 days, 10 hours, 16 minutes, 13 seconds. Subtracting this sum from the next-smaller number of the conjunctions — that is, from 29 days, 12 hours, 44 minutes, 3 seconds — leaves 18 days, 2 hours, 27 minutes, 50 seconds. Adding the 11 days that will have been dropped from the year up to that time (for the dropped days must always be added on account of the equation of the equinox [aequatio aequinoctii]) gives 29 days, 2 hours, 27 minutes, 50 seconds. The mean new moon therefore falls on the 29th of September, at 2 hours, 27 minutes, 50 seconds after noon, as appears in these formulas:

| D. | H. | M. | S. |
|-----------|-----------|-----------|-----------|
| 1 | 23 | 51 | 2 |
| 2 | 16 | 17 | 36 |
| 6 | 18 | 7 | 35 |
| 11 | 10 | 16 | 13 |
| | | | |
| D. | H. | M. | S. |
| 29 | 12 | 44 | 3 |
| 11 | 10 | 16 | 13 |
| 18 | 2 | 27 | 50 |
| 11 | | | |
| 29 | 2 | 27 | 50 |

If from this time you subtract the time of one mean lunation — having first added the 31 days of the preceding month of August, because the subtraction cannot otherwise be made — the remainder will be the time of the preceding mean new moon, which occurs in August on the 30th day, at 13 hours, 43 minutes, 47 seconds. If, on the other hand, to that same found time you add the time of one mean lunation and then subtract from the sum the 30 days of the month of September, you will find that the following new moon occurs in October on the

28th day, at 15 hours, 11 minutes, 53 seconds. But if from the time of any new moon you take away half a lunar month — that is, 14 days, 18 hours, 22 minutes, 2 seconds — or add the same to it, you will find the time of the preceding or following mean full moon. Thus you will find the full moon in September occurring on the 14th day, at 8 hours, 5 minutes, 48 seconds; and in October on the 13th day, at 20 hours, 49 minutes, 52 seconds. But always remember that the days of the preceding month must be added when the subtraction cannot be made, and that the days of the given month must be taken away when the collected sum exceeds the days of that month.

Now let the mean Paschal full moon be sought, in March or April of the year 2673. I say "in March or April" because it is not yet settled in which month the Paschal full moon will fall. For the 2600 years take the epacts 21 days, 23 hours, 17 minutes, 36 seconds; for the 72 completed years, the epacts 15 days, 18 hours, 32 minutes, 52 seconds; and for the elapsed February of a common year, the epacts 29 days, 11 hours, 15 minutes, 57 seconds. Their sum is 67 days, 5 hours, 6 minutes, 25 seconds. Since this sum, subtracted from the next-larger number of the oppositions — namely from 73 days, 19 hours, 50 minutes, 8 seconds — leaves 6 days, 14 hours, 43 minutes, 43 seconds; and since, with the addition of the 18 days that will have been dropped up to that time, the mean Paschal opposition occurs in the month of March on the 24th day, at 14 hours, 43 minutes, 43 seconds — this must be assigned to the following day, the 15th [recte: 25th], on which the 14th Moon then falls, of epact xix, which concurs with golden number 14.

But if, instead of February, you had taken for March of a common year the epacts 1 day, 9 hours, 47 minutes, 50 seconds, you would have made a sum of 39 days, 3 hours, 38 minutes, 18 seconds; and this, taken from 44 days, 7 hours, 6 minutes, 5 seconds (which is the next-larger number of the oppositions), leaves 5 days, 3 hours, 27 minutes, 47 seconds. Adding the 18 days that will have been withdrawn from the year, the full moon falls in April on the 23rd day, at 3 hours, 27 minutes, 47 seconds — which is not Paschal, since it follows the 19th of April, the day at which the mean Paschal full moons are closed off. Take away, therefore, a whole lunation from that time (having first added the 31 days of the preceding month of March), and you will find the full moon in March on the 24th day, at 14 hours, 43 minutes, 44 seconds, very nearly as before.

Further, let the mean Paschal full moon be sought in March or April of the year 1591. For the 1500 years take the epacts 10 days, 16 hours, 18 minutes, 2 seconds; for the 91 completed years, the epacts 15 days, 2 hours, 0 minutes, 26 seconds; and for the elapsed February of a bissextile year, the epacts 0 days, 22 hours, 31

minutes, 54 seconds. These make a sum of 26 days, 16 hours, 50 minutes, 22 seconds. When this sum is subtracted from the next-larger number of the oppositions — that is, from 44 days, 7 hours, 6 minutes, 5 seconds — and the 10 days dropped from the year are added, the mean Paschal full moon falls in March on the 27th day, at 14 hours, 15 minutes, 43 seconds — that is, on the 28th day, on which the 14th Moon also falls, of epact xvj, which concurs with golden number 16.

But if, instead of February, you had taken for March of a bissextile year the epacts 2 days, 9 hours, 47 minutes, 50 seconds, you would have found the full moon in April on the 26th day, at 2 hours, 59 minutes, 47 seconds — which is not Paschal. When, therefore, a whole lunation has been taken away (with the 31 days of the preceding month of March added first), the Paschal full moon presents itself in March on the 27th day, at 14 hours, 15 minutes, 44 seconds, very nearly as before.

Finally, if you wish to know the mean Paschal full moon in March, [or April,] of the year 388: for the 300 years take the epacts 3 days, 17 hours, 31 minutes, 59 seconds; for the 87 completed years, the epacts 1 day, 1 hour, 59 minutes, 1 second; and lastly, for the elapsed February of a bissextile year, the epacts 0 days, [numeral: ?] hours, 31 minutes, 54 seconds. Subtract the sum of all of them — 5 days, 18 hours, 2 minutes, 54 seconds — from the next-larger number of the oppositions, namely from 14 days, 18 hours, 22 minutes, 2 seconds, and you will find that the full moon sought occurs in March,

on the 9th day, at 0 hours, 19 minutes, 8 seconds — which cannot be Paschal, since it does not follow the 21st day, assigned to the equinox. Therefore, when a whole lunation has been added, there result 38 days, 13 hours, 3 minutes, 11 seconds; and when the 31 days of the month of March are taken away, that full moon will fall in April on the 7th day, at 13 hours, 3 minutes, 11 seconds — that is, on the 8th day. And the 14th Moon of golden number 9 then falls on the 7th of April, as the reckoning requires.

And indeed, if instead of February you had taken, with March of a bissextile year, the epacts 2 days, 9 hours, 47 minutes, 50 seconds, you would at once have found the full moon in April on the 7th day, at 13 hours, 47 minutes, 50 seconds — nearly the same as before.

[Margin: Why all the dropped days must be added to the reckoning of the lunations, so that the mean new and full moons may be found truly, even though

in the expanded table the descent has not been made through as many lines of epacts.]

But if you should ask why all the dropped or omitted days must be added to the calculation, given that the descent through the expanded table has nonetheless been made throughout by so many lines of epacts, know that the reason is this. Astronomical calculation exhibits the lunations as they truly occur in the heavens, as though no day had been removed, taking no account of the equation of the Moon [aequatio Lunae] — since the calculation itself equates the Moon on its own, and the equation of the Moon is applied only to correct the nineteen-year cycle. Consequently, if up to the time at which the calculation is set up some days have been removed on account of the equation of the equinox, the lunations will fall that same number of days later; for in the calculation those very days had been assumed. Necessarily, therefore, all the removed days must be added, so that the lunations may fall on their proper days.

The Arguments of Maestlin against the New Moons, the Paschal Fourteenths, and the Equation both of the Epacts and of the Solar Cycle of the New Calendar, and their Refutations

CAPVT VII.

[Margin: Solution of the arguments of Maestlin and of others against the new moons of the epact cycle of the new Calendar.]

From what we wrote in the immediately preceding chapter, all the arguments — not only of Maestlin but of others too — that have been, or can be, devised against the new moons of the new Calendar are dissolved with no trouble at all. For they all establish only this one thing: that the new moons found from our epacts do not entirely agree with the true or the mean new moons, but for the most part fall before them. This we grant freely and of our own accord, and in the preceding chapter we laid open the reason why it must necessarily be so — so that there is no need (as Maestlin, jesting ineptly and insipidly, would have it be voiced abroad) for us, the mathematical Fathers or Patrons of this Calendar, to come running up and bring relief to our feeble client. For we showed most clearly in the preceding chapter that this new Calendar is entirely correct in setting out the new moons according to the use of the Church. Nor, in this restoration of the Calendar, did we (as he falsely supposes) attempt an impossible task, on the ground that, by our own admission, no cycle can correspond in every respect to the celestial motions — unless perhaps he should wish to say that Julius Caesar

[Iulius Caesar], the Alexandrians, the Council of Nicaea [Concilium Nicaenum], and all antiquity undertook an empty labor in inscribing cycles in the Calendar, which would be the height of madness. For although the cycle, of set purpose, subordinates the new moons for the sake of the correct celebration of Easter, it does not on that account allow them to stray far from the true ones; so that it is worth the trouble to know them even when they are thus subordinated — especially since from the cycle we learn how many days the Moon usually has after conjunction, so truly that, when the Moon is called first, second, third, fourteenth, and so on, we understand it to be roughly the first, second, third, fourteenth day, and so on, elapsed since the conjunction.

[Margin: That the cycle of epacts in the Calendar does not show how many days have usually elapsed after the true conjunction.]

As for the fourteenth Paschal Moons [Lunae xiiii Paschales], Maestlin shows himself so ignorant of and unacquainted with ecclesiastical custom, and this with such great arrogance and effrontery, that I am ashamed — such as I am — to dispute with a man of his kind. For, in order to prove that our fourteenth Paschal Moons are erroneous and false and do not agree with the celestial motions, he heaps up, on pages 24 and 25, seventy years from the year 1500 up to the year 1700, in which our Paschal terms either precede the mean oppositions by only a single day or follow them — on his own testimony too. And this fact not only does not undermine our cycle; it actually confirms it so far that we must own ourselves indebted to him for a great favor, with whatever intention he did it. For in the preceding chapter we amply demonstrated that, in any cycle, in order that it may correctly indicate the Paschal terms (that is, the fourteenth Moons), it is enough that its numbers never present the fourteenth Paschal Moon two days before the mean opposition, but only a single day before it, or at any rate at the mean opposition itself, or a little after it. And this is exactly what is observed in the years adduced by our adversary.

[Margin: Maestlin's ignorance and arrogance in attacking the fourteenth Paschal Moons.]

For the rest, in this very matter he has slipped shamefully, and almost childishly, when he supposes that the Paschal Moon does not differ from the mean opposition, and that accordingly, whenever the former does not agree with the latter, an error — on his view — is committed in the Paschal term. This is a thing unheard of and novel in the Church of God, as is plain from the preceding chapter. But what wonder is it, if a man not only ignorant of ecclesiastical matters, but also carried away by his zeal for contradiction, comes to grief so

fouly and so often? For he shows himself no more skilled in these seven years — 1576, 1578, 1579, 1580, 1581, 1582, 1583 — in which he rages so wildly that he cries out that we have prostituted ourselves to the whole world to be mocked, since in these years too, in which we brought forth and delivered this offspring into the light, we erred most enormously. But let him see to it that he does not, like a madman deriding sane men, prostitute himself to be mocked by everyone — since, gathering up the witnesses of his own folly, he plainly declares that he has not touched even with the tips of his lips, as the saying goes, the things that the Fathers and Councils decreed concerning the correct celebration of Easter. For in these seven years the fourteenth Paschal Moons, according to our epacts, do not disagree with the decrees of the Councils, since they always either precede the mean oppositions by a single day, or coincide with them, or finally fall a little after them, as is clear in this little table.

[Margin: That Maestlin's arguments against the fourteenth Paschal Moons confirm rather than weaken the cycle of epacts. Maestlin's error in thinking the mean opposition and the fourteenth Moon to be one and the same thing.]

The mean oppositions for these years (the table standing at the head of the page):

| Year of the
Lord | Golden
number | Ep
act | 14th [moon],
Paschal | Mean opposition (D. H.
M.) |
|---------------------|------------------|-----------|-------------------------|-------------------------------|
| 1576 | 19 | xxi
x | 14 Apr. | 13. 1. 37 |
| 1578 | 2 | xxi
i | 22 Mar | 22. 19. 15 |
| 1579 | 3 | iii | 10 Apr. | 10. 16. 47 |
| 1580 | 4 | xiii
i | 30 Mar. | 30. 1. 36 |
| 1581 | 5 | xx
v | 18 Apr. | 17. 23. 9 |
| 1582 | 6 | vi | 7 Apr. | 7. 7. 57 |
| 1583 | 7 | vii | 6 Apr. | 6. 16. 46 |

[Margin: On Maestlin's consideration, in which he examines the years before the correction as if 10 days had been removed from them.]

Nor was he careful enough — to put it as gently as possible — with these four years, 1511, 1527, 1571, and 1579, in which he set out to show that the Paschal 14th moons of the epacts stand further from the true full moons, that is, that they

anticipate them by two days. (This is in any case beside the point, since in this matter it is the mean motions that must be considered, not the true ones.) He fixed his mind so intently on overturning the new Calendar that, all but forgetting his own purpose and not considering what he was doing, he computed the full moons of those years exactly as if 10 days had already been removed from them — when in fact those years precede the year of the correction. This is utterly ridiculous. For since the beginning, or root, of the removal of the 10 days is set in the year 1600, from which the equation to be applied thereafter advances every four-hundredth year, one must not subtract 10 whole days from the years that precede our correction, but something less — especially from years further removed from 1600, such as the year 1511. It would therefore be no wonder if the Paschal 14th moon of that year did not correspond exactly to the mean, or indeed the true, full moon. That Maestlin has in fact extracted 10 days from those years is clear from this: his calculation only works out if the days I have mentioned are treated as removed — which is what this table shows.

| Year of
the Lord | Golde
n
numb
er | Epact, if 10
days had
been
removed
from these
years | 14th
[moon],
Paschal | Mean full
moon (D. H.
M.) | True new
moon acc. to
Maestlin (day) |
|---------------------|--------------------------|--|----------------------------|---------------------------------|--|
| 1511 | 11 | xxi | 23 Mar. | 23. 22. 35 | 25 Mar. |
| 1527 | 8 | xviii | 26 Mar. | 26. 23. 57 | 28. Mar |
| 1571 | 14 | xxiii | 18 Apr. | 9. 4. 6 | 20. Apr. |
| 1579 | 3 | xxiii | 21 Mar | 22. 4. 3 | 23. Mar. |

Here you see that the Paschal 14th moons precede the mean full moons by a single day only, which is quite enough for the correct celebration of Easter, as we have often said. And so, even though he maliciously subtracted 10 days from those years, he accomplished nothing; rather, he confirmed our 14th moons. But if those years are taken before the correction of the Calendar — that is, without the subtraction of the 10 days, as is proper — then their epacts, Paschal 14th moons, and mean full moons would stand in the new Calendar as this second table sets out, in which again you see that the 14th moons are legitimate according to the prescription of the Council of Nicaea, and indeed that the Paschal 14th moon of the year 1571 is more legitimate than if 10 days were removed.

| Year of the Lord | Golden number | Epact before the correction of the year | 14th [moon], Paschal | Mean full moon (D. H. M.) |
|------------------|---------------|---|----------------------|---------------------------|
| 1511 | 11 | j | 12 Apr. | 12. 11. 19 |
| 1527 | 8 | xxviii | 15 Apr. | 15. 12. 41 |
| 1571 | 14 | iiii | 9 Apr. | 9. 4. 6 |
| 1579 | 3 | iii | 10 Apr. | 10. 16. 48 |

[Margin: Maestlin's argument, that because of the elision of 3 intercalary days in every 400 years most of the Paschal full moons of the new Calendar belong to the second month.]

Next he attempts to show that in the new Calendar the Paschal full moons of many years belong to the second month, even though they are assigned to the first. He gives as his example these years: 1571, 1590, 1609, 1628, 1647, 1666, 1685, in all of which the golden number is 14 and the epact xxiii, which has its Paschal term on 18 April — provided, that is, that 10 days are imagined removed from the year 1571 (as he also did above), even though that year precedes the correction and therefore had its Paschal term, or 14th moon, not on the 18th but on 9 April. For in all these years he says that calculation from the most recent observations proves [?] that the Paschal 14th moon belongs to the second month. Here he sharply censures all of us who took part in this correction, alleging — falsely, as he supposes — that we were not engaged in fresh observations, whereas, as he says, careful work tested by new observations is required in this matter, because the slightest slip causes an error of a whole month. He throws the cause of the error back onto the table of the equation of the epacts and onto the unequal anticipation of the lunations and of the equinoxes, since the latter anticipate by one

day sooner than the former. For he does not understand how it can happen that from the year 1500 to 1700 exclusive the golden number 14, presenting according to the equation table the epact xxiii, places the Paschal 14th moon on 18 April, ruling that it belongs to the first month.

[Margin: Maestlin's error in defining the first month.]

(In defining the first month, however, he falls back into his old error, calling the first month the one whose new moon is nearest the vernal equinox, whether it be counted among the preceding or the following days — which we refuted in Chapter 1 of the previous book.) Whereas from the year 1700 to 1900 exclusive

the same golden number 14, presenting the epact xxij, moves the Paschal 14th moon from 18 April to 21 March, exactly as if it no longer belonged to the first month but to the second. And he asserts that far grosser absurdities follow in the years thereafter. For in the same way, from 2200 to 2300 exclusive, the golden number 17 presents according to the equation table the epact xxij and throws the Paschal 14th moon onto 18 April. But from 2300 to 2400 exclusive the same golden number 17 indicates the epact xxij, and hence the Paschal term on 21 March. Then from 2400 to 2500 exclusive the same golden number 17 again presents the epact xxij and the Paschal term on 18 April, as before from 2200. And so — he says — in the new Calendar, in those years in which the golden number is 17, from 2200 to 2300 exclusive it holds that the mean opposition occurring in March (he should have said the 14th moon, which is what he always meant) will always precede the equinox, and therefore cannot be Paschal; but in the years to come from 2300 to 2400 exclusive, that same mean opposition (that is, the 14th moon) will fall on the equinox or follow it, and therefore cannot fail to be Paschal; and finally, from 2400 to 2500 exclusive, the same mean opposition (that is, the 14th moon) will again precede the Sun's entry into Aries, and so will cease to be Paschal — which seems to him false. For "How is it possible," he says, "that the equinox, whose anticipation is always faster than the anticipation of the lunations, should produce a full moon (that is, a 14th moon) which had begun to be the Paschal term, and then presently strip it of that office again? This thing is surely by far most absurd, utterly unheard of, and diametrically contrary to the whole certainty of astronomy and to truth," and so on.

[Margin: Two closely related arguments which, if they were worth anything, would abolish entirely the restitution of the equinox and the correction of the year.]

By a similar argument he tries to prove that many Paschal terms in the new Calendar belong to the last month rather than the first, in these words: "It has been demonstrated above (if it please GOD) that the true vernal equinox can recede from 21 March as far as the 27th. It will therefore follow that every full moon (that is, every 14th moon) that falls between the 21st and the true day of the true equinox — after the 21st — is taken by the new Calendar as the Paschal term. But such an opposition (that is, such a 14th moon) does not then belong to the first month of the following year, but to the last month of the preceding year."

Here I cannot sufficiently marvel at Maestlin's arrogance — not to say malice.

[Margin: Solution of the two preceding arguments of Maestlin.]

While with ill will he seeks to abolish the new Calendar entirely, he simultaneously accuses all the mathematicians of the whole world — who declare with one voice (as the matter itself proclaims) that the equinox cannot be restored to its former seat except by the removal of a number of days from some year in which it is found to have advanced toward the beginning of the month. Yet Maestlin, of some new breed of astronomers, reproaches the new Calendar even on this ground: that by the omission of the intercalary day in certain centesimal years (which is to remove one day from the year) it restores the equinox to the very day from which it recedes. "Because," he says, "from this removal of a day it follows that a full moon which was previously Paschal presently ceases to be Paschal, and one which previously could not be Paschal presently cannot fail to be Paschal." A great sin indeed — that, to avoid its being committed, the equinox must never be recalled to its own seat (however far it has slipped from that seat toward the beginning of the month), when it cannot be recalled otherwise! A fine mathematician, truly, who — to make the new Calendar suspect to everyone, or rather hateful, as though it were stuffed with countless absurdities and manifold falsehood — would have every correction of the year whatsoever that could possibly be devised rejected; since in any emendation of the year some days must be removed so that the equinox may return to the day from which it had departed, which seems to him absurd and by no means to be granted. For if he would admit this subtraction, he would surely not be carried against the new Calendar with such violence; since, once it is granted, it necessarily follows — whether he likes it or not (a thing that seems to him an inexpressible crime) — that a 14th moon which, under a certain current cycle number, is now Paschal, will presently, after the elision of one day, no longer be Paschal, and vice versa. By what reasoning this can happen, I shall not be reluctant to teach him here, if he is willing to learn, since he confesses he does not know it. Listen, then, Maestlin.

[Margin: When the transition is made from the upper line of the expanded table to the lower one: the Paschal new moon of the fifth day of April ceases to be Paschal, and the non-Paschal new moon of the seventh day of March begins to be Paschal.]

Whenever a passage is made from some line of the expanded table of epacts to the line below it — as necessarily happens in the centesimal years that are not leap years, in which nevertheless the Moon is not to be equated — then, if in the upper line some golden number corresponded to the epact *xxiiij*, the Paschal new moon of that golden number was on 5 April, where the last Paschal new moon falls; but the new moon of the same golden number on 7 March was not Paschal.

In the lower line, however, the new moon of the same golden number will no longer be Paschal in April, since that same golden number now corresponds to the epact *xxiij*, which has its 14th moon on 19 April and its new moon on 6 April — beyond the Paschal limits, of course. Yet the same golden number will then have its Paschal new moon in March, because the epact *xxiij* corresponding to it is placed on 8 March, where the Paschal new moons begin. You see, then — unless perhaps you wish to be blind — that the new moon of that golden number is Paschal in April while the upper line of epacts is in use, but ceases to be Paschal when the lower line of epacts is employed; and likewise that the new moon of the same golden number in March is not Paschal while the earlier line of epacts is in use, but begins to be Paschal when the later line of epacts serves. The astronomical reason for this too is plain. For when the intercalary day is omitted in some centesimal year, if the Moon then needs no equation, all the new moons descend one day in the Calendar toward the ends of the months. Therefore the new moon that previously fell on 5 April, and was Paschal, but afterward falls on 6 April, ceases to be Paschal. Conversely, the new moon that previously fell on 7 March, and was not Paschal, but afterward falls on 8 March, becomes Paschal.

[Margin: When the transition is made from the lower line of the expanded table to the upper one: the Paschal new moon of the eighth day of March ceases to be Paschal, and the non-Paschal new moon of the sixth day of April begins to be Paschal.]

Again, whenever a passage is made from some line of the expanded table of epacts up to the line above it — as necessarily happens in the centesimal leap years, in which the Moon is to be equated — then, if in the upper line some golden number corresponded to the epact *xxiij*, the Paschal new moon of that golden number was on 8 March, where the Paschal new moons begin; but the new moon of the same golden number on 6 April was not Paschal. In the upper line, however, since the same golden number now indicates the epact *xxiiij*, the new moon of that golden number falling on 7 March ceases to be Paschal, while another falling on 5 April becomes Paschal. Here again you see that the new moon of that golden number is Paschal in March while the lower line is in use, but ceases from that office when the upper line is taken up; and likewise that the new moon of the same golden number in April is not Paschal so long as the lower line is employed, but becomes Paschal as soon as the upper line is received into use. The astronomical reason for this too, if you ask, is as follows. When the intercalary day is retained in some centesimal year and the Moon is to be equated, all the new moons ascend one day toward the beginnings of the months in the Calendar. Therefore the new moon falling, before the equation of the

Moon, on 8 March, is Paschal; and falling, after the equation, on 7 March, can no longer be Paschal. By the same reasoning, the new moon falling, before that equation, on 6 April, is not Paschal; and falling, after the same equation, on 5 April, becomes Paschal. This thing, then, is not "by far most absurd, utterly unheard of, and diametrically contrary to the whole certainty of astronomy and to truth," as you falsely rail, but is fully consonant with the precepts of astronomy — so that your ignorance in this matter cannot be excused in any way, seeing that you confess yourself unable to understand a thing that is perfectly clear in itself.

[Margin: The Paschal full moons in April of certain years cited by Maestlin do not belong to the second month, as he falsely supposes, but to the first.]

Moreover, that it is untrue that in these 7 years — 1571, 1590, 1609, 1628, 1647, 1666, 1685, adduced by Maestlin — the full moons which in the new Calendar are Paschal in April belong to the second month and not the first, as he asserts, is clearly established from the following table, in which it is plainly seen that their mean full moons of March do not belong to the first month, as he wrongly maintains, but to the last, or twelfth; inasmuch as they do not follow 21 March, on which the equinox is fixed by the Church, but rather precede it — whereas mean Paschal full moons, that is, those of the first month, ought to follow the equinox, and the Paschal 14th moons ought never to run ahead of the very day of the equinox, as is manifest from what we said before.

| Year of the Lord | Golden number | Epact | Mean opposition of March (D. H. M.) |
|--------------------|---------------|--------|-------------------------------------|
| 1571 | 14 | xxiiij | 20. 15. 22 |
| 1590 | 14 | xxiiij | 20. 7. 54 |
| 1609 | 14 | xxiiij | 20. 0. 27 |
| 1628 | 14 | xxiiij | 19. 16. 59 |
| 1547 [recte: 1647] | 14 | xxiiij | 20. 9. 32 |
| 1666 | 14 | xxiiij | 20. 2. 4 |
| 1685 | 14 | xxiiij | 19. 18. 37 |

[Margin: The 14th moons of the first month are referred by the Church to 21 March, the day appointed for the equinox, even though the equinox is sometimes distant from that day.]

Nor is it an objection that these full moons, by the Alphonsine calculation, are later than the equinox, since by the Prutenic Tables they are earlier — as Maestlin himself admits. Indeed, whatever the case may be regarding the

equinox, whether by the Alphonsine calculation or the Prutenic, it is of no concern to us, since the Church, setting the tables aside, fixes the equinox to a single day, namely 21 March, even though the true equinox sometimes nods to either side, provided it does not depart too far from it. And indeed the Church very often rejects some full moons as non-Paschal, on this ground alone: that their 14th moons anticipate the 21st of March, the day assigned to the equinox, even though in reality they fall on the equinox; and likewise accepts others as Paschal because their 14th moons fall on the 21st, the equinoctial day, even though they really run ahead of the equinox itself. This is clearly seen in the leap years and in those that are third from the leap year. For in the former, although the equinox reaches 20 March, the Church nevertheless rejects all the lunations whose 14th days fall on 20 March, that is, on the equinox; while in the latter it approves all the lunations whose 14th moons fall on the 21st, even though in them the equinox occurs after the 21st. This too we taught in Chapter 5 of the previous book.

[Margin: Refutation of Maestlin's other calumnies against the Paschal lunations.]

But so that this too may be apparent — that the golden number 14, from 1700 to 1900, rightly throws the Paschal lunation from April back into March (which he himself cannot stomach), and that the golden number 17, from 2200 to 2300, fittingly presents the same in April, but from 2300 to 2400 in March, and finally from 2400 to 2500 most fitly assigns it to April — we have computed the following mean oppositions. Here it appears that the mean full moons of golden number 14, or of epact xxiiij, in April from 1700 to 1900 are not Paschal, since they follow the 19th, after which no mean full moon is Paschal, lest Easter — which sometimes falls on 19 April — be celebrated before the mean full moon. And that from 2200 to 2300 the mean oppositions of the month of March, when the golden number is 17 and the epact xxiiij, are not Paschal, because they do not follow 21 March, the day appointed for the equinox. Likewise that the mean oppositions of April from 2300 to 2400, when the golden number

Table of mean full moons (mean full moon = day · hour · minute; month). The years of the Lord in which golden number and epact combine to place a mean full moon near the paschal limit, with the resulting month.

| Anni Domini | Aurei
numeri | Epa
ct. | Plenilunia media (D. H.
M.) | Menses |
|-------------|-----------------|------------|--------------------------------|--------|
| 1723 | 14 | xxii
i | 19. 16. 26 | Apr. |

| Anni Domini | Aurei
numeri | Epa
ct. | Plenilunia media (D. H.
M.) | Menses |
|-------------|-----------------|------------|--------------------------------|-----------------------|
| 1742 | 14 | xxii
i | 19. 8. 58 | Apr. |
| 1799 | 14 | xxii
i | 19. 10. 35 | Apr. |
| 1818 | 14 | xxii
i | 20. 3. 8 | Apr. |
| 1837 | 14 | xxii
i | 15. 19. 40 | Apr. |
| 1875 | 14 | xxii
i | 20. 4. 45 | Apr. |
| 1894 | 14 | xxii
i | 19. 21. 18 | Apr. |
| 2201 | 17 | xxii
ii | 20. 0. 23 | Mar. |
| 2220 | 17 | xxii
ii | 19. 15. 55 | Nar. [recte:
Mar.] |
| 2239 | 17 | xxii
ii | 20. 9. 37 | Nar. [recte:
Mar.] |
| 2258 | 17 | xxii
ii | 20. 2. 0 | Mar. |
| 2277 | 17 | xxii
ii | 19. 18. 32 | Mar. |
| 2296 | 17 | xxii
ii | 19. 11. 5 | Mar. |
| 2315 | 17 | xxii
i | 19. 16. 21 | Apr. |
| 2334 | 17 | xxii
i | 19. 8. 54 | Apr. |
| 2372 | 17 | xxii
i | 20. 5. 15 | Apr. |
| 2391 | 17 | xxii
i | 19. 10. 31 | Apr. |
| 2410 | 17 | xxii | 20. 14. 19 | Mar. |

| Anni Domini | Aurei
numeri | Epa
ct. | Plenilunia media (D. H.
M.) | Menses |
|-----------------------|-----------------|------------|--------------------------------|--------|
| | | ii | | |
| 2429 | 17 | xxii | 20. 6. 52 | Mar. |
| | | ii | | |
| 2448 | 17 | xxii | 19. 23. 24 | Mar. |
| | | ii | | |
| 3467 [recte:
2467] | 17 | xxii | 20. 15. 57 | Mar. |
| | | ii | | |
| 2486 | 17 | xxii | 20. 8. 29 | Mar. |
| | | ii | | |

Continuing the argument from the preceding leaf: ... [golden] number 17 and epact xxiii coincide, these full moons are not paschal, because they fall after 19 April — just as happens from the year 1700 to 1900. Likewise, in the month of March, from the year 2400 to 2500, when golden number 17 and epact xxiii coincide, they are again not paschal; nor are they paschal from 2200 to 2300, for the reason I set out there. From all this one may conclude that Maestlin, driven more by an eagerness to slander than by love of the truth, so shamelessly maligns the new Calendar — since in our new Calendar everything is preserved exactly as the sacred Councils and the Fathers decreed concerning the celebration of Easter.

It is established, therefore, that Maestlin asserts falsely that in the new Calendar many full moons are assigned to the first month, in April, which in truth belong to the second.

As for his claim that the equinox will advance from 21 March all the way to the 27th, and that consequently at that time all the full moons falling after the 21st but before the 27th belong to the last, or twelfth, month of the year, though in the new Calendar they are assigned to the first month — he is merely guessing, and, as the saying goes, is wrong by the whole sky. For not even according to the Prutenic Tables [Tabulæ Prutenicæ], in which he places his greatest trust, can the equinox recede from 21 March by more than two or three days, and a little more, even over a span of 10,000 years, as we showed in Chapter vi of the preceding Book. And should it happen that the equinox falls after 21 March, so that some lunation is taken as paschal whose fourteenth day precedes the equinox; or should it happen that the equinox precedes 21 March, so that some lunation whose fourteenth day falls on the equinox itself or after it is not reckoned paschal, even though it belongs to the first month — this is not to be charged as a

fault against the Church, which in this matter, setting aside the true and the mean motions, follows something uniform and regular that does not stray far from the truth, so that this inconvenience can in no way be avoided, as we explained more fully in Book 1.

[Margin: It is false that the equinox can recede from 21 March to the 27th, as Maestlin holds.]

Hence Maestlin turns his weapons against the table of the equation of epacts [tabula æquationis Epactarum] — which nevertheless, compelled by the truth, he in part praises and commends, as constructed with great labor and no little skill, and, as he says, contrived with a fine ingenuity; and not undeservedly, since in it the omission of three days every 400 years, on account of the anticipation of the equinoxes, agrees so well with the equation of the Moon to be applied every three-hundredth year, on account of the ascent of the lunations, that the solar year and the lunar year are seen to be perpetually in mutual agreement, and the very method of the equation can be fitted to any magnitude whatever of the solar year, as we have said. And indeed I do not doubt that he would have judged it worthy of still greater praise had he understood its root [radix], which we fixed — not rashly nor by chance, but after mature consideration — at the year of the Lord 550. Nor, had he understood it, would he have dared either so boldly to censure, or so foully to correct — or rather to corrupt — the equation restored for the years before the correction, since the equation table cannot be constructed otherwise than as we constructed it, as is clear from Chapter 4.

But so that the rashness and ignorance of Maestlin in this matter of the equation of epacts may be plain to all, let us examine a little more carefully what he wrote about it in his *Examen*. After he had set out the perpetual table of the cycle of epacts — in which, however, he confesses that he cannot understand what mystery lies hidden in the epact 25 of a different color or character, and why the letters of the alphabet were not written above the epacts that correspond to golden number 1, but rather above those that correspond to golden number 3 (we gave the reason for both above, in Chapters 3 and 4) — he attempts to construct a table of the equation, and to correct, or rather to corrupt, that same table, as follows, having first set out the equation table as it is described in the new Calendar. In this table, however, and in the others he made, we placed this sign ☾ whenever the Moon needs an equation, just as we did above in the equation table of epacts of the expanded table.

TABLE OF THE EQUATION OF THE PERPETUAL CYCLE [Tabula æquationis Cycli perpetui], placed in the new Calendar.

The source prints this as three side-by-side panels forming a single continuous series of centennial years (1 → 4900); the panels are concatenated below in sequence. Columns: epact index letter · Anni Dñi (years of the Lord) · bissextile mark · lunar-equation mark (☾ = one equation, ☾ ☾ = two).

| Index | Anni Dñi | Biss. | Lun. |
|-------------------------------|----------|-------|------|
| N | 1 | | |
| P | 320 | Biss. | |
| P | 500 | Biss. | |
| a | 800 | Biss. | ☾ |
| b | 1100 | Biss. | ☾ |
| c | 1400 | Biss. | ☾ |
| <i>(Detractis 10. Diebus)</i> | | | |
| D | 1582 | | |
| D | 1600 | Biss. | |
| C | 1700 | | |
| C | 1800 | | ☾ ☾ |
| B | 1900 | | |
| B | 2000 | Biss. | |
| B | 2100 | | ☾ |
| A | 2200 | | |
| u | 2300 | | |
| A | 2400 | Biss. | ☾ |
| u | 2500 | | |
| t | 2600 | | |
| t | 2700 | | ☾ |
| t | 2800 | Biss. | |
| f | 2900 | | |
| f | 3000 | | ☾ |
| r | 3100 | | |
| r | 3200 | Biss. | |
| r | 3300 | | ☾ |
| q | 3400 | | |

| Index | Anni Dñi | Biss. | Lun. |
|-------|----------|-------|------|
| P | 3500 | | |
| q | 3600 | Biss. | ☾ |
| P | 3700 | | |
| n | 3800 | | |
| n | 3900 | | ☾ |
| n | 4000 | Biss. | |
| m | 4100 | | |
| l | 4200 | | |
| l | 4300 | | ☾ ☾ |
| l | 4400 | Biss. | |
| k | 4500 | | |
| k | 4600 | | ☾ |
| i | 4700 | | |
| i | 4800 | Biss. | |
| i | 4900 | | ☾ |

The following is Maestlin's quoted reconstruction and critique of the table (introduced by "says Maestlin"); it is set in italic throughout and continues to the end of the leaf and beyond.

"Since, then (says Maestlin), according to the author's view those epacts whose index is D belong to the years from 1600 to 1700, as was said above, therefore at the year 1600 the epact-index letter D is prefixed. But in the year 1700 the intercalary day is dropped, the lunation being at rest — for its anticipation has not yet completed a whole day; and therefore all the lunations become one day later. Thus, whereas between 1600 and 1700 all the years whose golden number is 3 had epact xxij — that is, since in the new Calendar, wherever the epact is xxij the Moon in those years would become new on that day, or since in the paschal table (which will follow shortly) epact xxij would show, in those years, the paschal limit on 21 March — this same thing, after the bissextile day of the year 1700 has been removed, will occur on the day immediately following, on which the epact is xxv. Therefore golden number 3 will then have epact xxv. Its index in the table of epacts is C. Therefore the letter C is prefixed at the year 1700. What is said of the years whose golden number is 3 is to be understood likewise of all the rest. It pleased [the author], however, to choose golden number 3 as an

example in place of all the others, because the author placed the index letter above it, as I noted before.

"Next, in the year 1800 one intercalary day is dropped, and at the same time the anticipation of the lunation completes a whole day. Therefore, a mutual compensation being made, the cycle of epacts is not interrupted for this century, but the index C remains here also.

"Moreover, in the year 1900 the same thing happens as in 1700. Hence golden number 3 passes to epact xxi, whose index is B.

"Again, in the years 2000 and 2100 this cycle is not interrupted. For in the former both the lunation and the intercalary day are at rest; in the latter the reasoning is the same as in 1800. Therefore the index B is retained, through 300 years, in the office of showing the equation of epacts.

"Once more, the years 2200 and 2300 agree with the year 1700; hence golden number 3 descends, in the former year, to epact xx, and in the latter to xix, having there as its index letter A for the former and u for the latter.

"But in the year 2400, after the lunation has again consumed a day by anticipating, no omission of an intercalary day takes place; therefore the lunation, from golden number [epact] xix, ascends again to epact xx, and again obtains the index A. The same is to be understood of the rest. For by a similar procedure the several index letters were found, reckoning back from the year 1582 of the correction. Nor has this table any other, subtler foundation, although the author studiously — not to say maliciously — concealed it.

"As for what is to be thought of the remaining years, those preceding the year 1582 of the correction, the author has indeed set it out rather intricately; yet if one examines a little more carefully, he will easily be able to gather what foundations he used, and in what regard they deserve to be held.

"From the letters indicating the equation of epacts, which the author set out in the next table for the years preceding 1582, one may observe that from the beginning of the years of Christ up to the year 320 he assigned to golden number 3 the epact xxix — for its index letter is N; but from the year 320 to 800 he attributed to it the epact xxx, which he himself marks with an asterisk *. Likewise, that for the years from 800 to 1100 he granted to the same golden number 3 the epact j, and from there to 1400 the epact ij, and again from 1400 to 1582 the epact iij, which

(Maestlin's quoted argument continues.)

after the correction he changed into xxiiij. And what I note about this golden number 3 is understood likewise of the rest that correspond to it, as I said a little before. Therefore throughout this whole time the lunations are held to anticipate gradually. Hence he applies to this period the Cycle of epacts corrected, but omits the anticipation of the equinoxes, as the following little table shows."

TABLE OF THE EQUATION OF EPACTS, EXPANDED [Tabula æquationis Epactarum expansa], which the author of the new Calendar contracted for the years before the correction.

The source prints three side-by-side panels forming a single continuous series (0 → 1800); concatenated below. Columns as before.

| Index | Anni Dñi | Biss. | Lun. |
|-------------------------------|----------|-------|------|
| N | 0 | Biss. | ☾ |
| N | 100 | Biss. | |
| N | 200 | Biss. | |
| P | 300 | Biss. | ☾ |
| P | 400 | Biss. | |
| P | 500 | Biss. | |
| P | 600 | Biss. | |
| P | 700 | Biss. | |
| a | 800 | Biss. | ☾ |
| a | 900 | Biss. | |
| a | 1000 | Biss. | |
| b | 1100 | Biss. | ☾ |
| b | 1200 | Biss. | |
| b | 1300 | Biss. | |
| c | 1400 | Biss. | ☾ |
| c | 1500 | Biss. | |
| <i>(Detractis 10. Diebus)</i> | | | |
| D | 1582 | | |
| D | 1600 | Biss. | |
| C | 1700 | | |
| C | 1800 | | ☾ |

(This table is derived from the immediately preceding critique; Maestlin continues:)

"From this table, which according to the author's view is drawn from the immediately preceding one, one may see in what esteem this whole work is to be held. For in the first place, how the author's reckoning agrees with astronomical calculation is shown by the equations of the lunations between the years 1400 and 1800, and, in the preceding table, between the years 3900 and 4300. It was said a little before that the anticipation of the lunations requires 304 years for one day, and that for their sake the equations, which are to be distributed only over hundreds of years, sometimes demand not merely 300 but 400 years. But a period of this kind requires twenty-five times three hundred years [25×300]: for those 4 years added to 300 do not complete a fourth hundred [a 400-year span] until they are accumulated twenty-five times over. Yet the author divides an equation of this kind only over twenty-five times a hundred years — namely, from the year 1600 to 4100 — which is plainly contrary to astronomical calculation, and can bear no excuse, nor any acquittal from falsehood.

"Next, lest this faulty reckoning be thought committed through mere imprudence, the author is not ashamed to compensate for it by another still more faulty, and, of set purpose, to collide the more grievously against astronomical truth. For in place of the equation of the lunations from the year 300 (or 320) up to 800 — that is, over 500 years — he substitutes but a single day of anticipation. And this is by far the most absurd of all, and utterly false in astronomy. For it can indeed sometimes happen, as has just been said, that on account of the 4 years adhering to the 300 the anticipation of the lunations requires 400 years to complete a single day; but to 500 years such a reckoning can never be extended. And in particular it is not the place to insert an equation of this kind beyond 300 years. For the year 800 is distant only 600 years from 1400, where the equation of this fourth hundred is interposed — a span that lies far too far from the period of this equation, which is twenty-five times three hundred years. Nor is it possible that this error was unknown to the author, for it is far too gross. But the reason the author chose to depart from manifest truth is doubtless this: that he attended with singular zeal to the customary golden number, and therefore forced his epacts, resisting in every way, dragging them by the hair, to agree with the golden number for the time of the Council of Nicæa. And this could not be done except by committing this enormous solecism. He preferred, therefore, that his numbers should agree with the golden number (which he did not notice by no means satisfies the lunations of that age) rather than that they should accord with [those of] the Council of Nicæa. Behold, these are the foundations of the table which,

above all the other numbers and tables of the whole new reformation, is the most artful.

"But if the author had continued this anticipation of the lunations in the same manner as before, through each 300 years, he would surely have found a different index letter of the equation of epacts for the time of the Council of Nicæa, as this following table makes clear."

TABLE OF THE EQUATION OF EPACTS, SUCH AS IT OUGHT TO HAVE BEEN MADE BY THE AUTHOR of the new Calendar [Tabula æquationis Epactarum qualis ab auctore novi Calendarii conficienda fuisset] for the years preceding the correction.

Three side-by-side panels, single continuous series (0 → 1800); concatenated below.

| Index | Anni Dñi | Biss. | Lun. |
|-------------------------------|----------|-------|------|
| M | 0 | Biss. | |
| M | 100 | Biss. | |
| N | 200 | Biss. | ☾ |
| N | 300 | Biss. | |
| N | 400 | Biss. | |
| P | 500 | Biss. | ☾ |
| P | 600 | Biss. | |
| P | 700 | Biss. | |
| a | 800 | Biss. | ☾ |
| a | 900 | Biss. | |
| a | 1000 | Biss. | |
| b | 1100 | Biss. | ☾ |
| b | 1200 | Biss. | |
| b | 1300 | Biss. | |
| c | 1400 | Biss. | ☾ |
| c | 1500 | Biss. | |
| <i>(Detractis 10. diebus)</i> | | | |
| D | 1582 | | |
| D | 1600 | | |

| Index | Anni Dñi | Biss. | Lun. |
|-------|----------|-------|------|
| C | 1700 | Biss. | |
| C | 1800 | | ☾ ☾ |

"In this table, the epact index letter that agrees with the years of the Council of Nicæa is not P, but N."

And so that the pointlessness and emptiness of this whole table drawn up by the author of the new Calendar may appear more clearly, we shall examine it with the correction of the equinoxes also applied, just as was done in Chapter 1 — since indeed the whole foundation of this correction, that is, of the new Calendar, and thus its very first origin, depends on the Council of Nicaea. The following table therefore shows the index letter of that century.

TABLE OF THE EQUATION OF THE CYCLE OF EPACTS FOR PAST YEARS, by which the correction both of the lunations and of the equinoxes is observed in the same way in which it is handed down by the author of the new Calendar to be observed in future time.

| Index | Anni Dñi | Biss. | Lunar mark |
|-------|----------|-------|------------|
| P | 0 | Biss. | |
| N | 100 | | |
| N | 200 | | ☾ |
| M | 300 | | |
| M | 400 | Biss. | |
| M | 500 | | ☾ |
| H | 600 | | |
| G | 700 | | |
| H | 800 | Biss. | ☾ |
| G | 900 | | |
| F | 1000 | | |
| F | 1100 | | ☾ |
| F | 1200 | Biss. | |
| E | 1300 | | |
| E | 1400 | | ☾ |
| D | 1500 | | |

| Index | Anni Dñi | Biss. | Lunar mark |
|-------|----------|-------|------------|
| D | 1600 | Biss. | |
| C | 1700 | | |
| C | 1800 | | ☾ ☾ |
| B | 1900 | | |
| B | 2000 | Biss. | |

Here again, you Mathematicians, patrons of the new Calendar, may observe how much certainty underlies your Calendar. For the age of the Council of Nicaea you see, from this last table — which follows the correction of the new Calendar as observed in the anticipation both of the equinoxes and of the lunations — that the index letter of the epacts that fits is the letter M. But from the immediately preceding table, in which only the correction of the lunations is retained, you see that the letter N is due for that same century. Yet the author of the Calendar, in order to impose falsely upon you, contrary to his own calculation and intent, foists on you the letter P. So for the same years — for example, those whose golden number is 13 — you have three epacts: namely, on account of the index letter of the equation M, the epact xxviii; on account of the letter N, the epact xxix; and on account of the letter P, the epact xxx, which is marked with an asterisk (*). But why do I find fault with this? I would rather congratulate you on the abundance of your Calendar. For if by this threefold calculation only a single index letter were yielded — as otherwise regularly happens in astronomical, indeed in every arithmetical, calculation, since however it may be varied it is never found to disagree with itself — perhaps you could not be so certain in determining the days of the new moons, or of the Paschal full moons. But as it is, since for a single day you have three, it can scarcely happen that you stray from the truth. Yet meanwhile it is clear from this that the author of the new Calendar did not exert himself much in examining the astronomical calculation precisely and comparing it with his own numbers. Judge therefore for yourselves whether, if the author did not understand these things, he deserves to have any authority granted him in the rest — and that on account of your shameful or affected ignorance; but if you were aware of these things, is he not to be cursed with imprecations, since he has maliciously cast a deception over your Pontiff, over all of you his followers, and over the whole world of Christians?

[Margin: Maestlin did not fully understand the table of the equation of the epacts.]

These, then, are the matters. As regards the table of the equation of the epacts, although he seems to himself to have thoroughly understood the matter, he has nevertheless not grasped everything. For, being ignorant of the root of our equation — which we have fixed in the year of the Lord 550 — he was unable to give the reason why the equation of the Moon was rejected by us: then from the year 1700, which stands three hundred years distant from the year 1400 (where the immediately preceding equation of the Moon was made), into the following hundredth year 1800; and again from the year 4200, which likewise stands three hundred years distant from the year 3900 (where the Moon was last equated), into the following hundredth year 4300. Yet we have explained the reason for this at length in Chapter 4. As for his saying that the author set out the equation, in the years preceding the correction, quite intricately, and that if anyone examines the matter a little more carefully he can easily gather what foundations the author used and what standing they deserve to be held in — no one should be surprised, since he himself was wholly ignorant of the author's foundations, and therefore judged, in conflict with the astronomical calculation, that the equation was rejected then from the year 1700 into 1800, and then from 4200 into 4300; in which he is plainly mistaken.

[Margin: The equation of the new Calendar agrees with the astronomical calculation between the years 1700 and 1800, against Maestlin.]

Take as an example the year 1723, between the year 1700 and 1800, whose epact, by our equation, is xxiii, throwing back its fourteenth Paschal moon to 21 March — a little before the mean opposition, which falls on the 21st day at about the 4th hour after noon, as reason requires. But if the Moon were equated in the year 1700, as Maestlin wishes, and this equation were not deferred into the following hundredth year, as is done by us, then in that year the epact would be xxiii, placing its fourteenth on 20 March, before the limits set by the Fathers. The epact xxiii would therefore have to be taken in April, which throws its fourteenth to 18 April; and therefore, if the following 19th were a Sunday, Easter would be celebrated before the mean full moon — which in that year fell on 19 April at the 16th hour after noon, namely a little before the sunrise of the 20th day — which would be absurd. The same difficulties would follow Maestlin's equation in many other years, which our equation easily avoids. Let Maestlin therefore see with what face, with what effrontery, he has said that our equation conflicts with the astronomical calculation, when his own equation — the one he would have established — is instead opposed both to astronomy and (what is greater) to the decrees of the holy Fathers, whereas ours agrees marvelously with both.

[Margin: Maestlin's error in defining the anticipation of the Moon.]

I WONDER greatly, moreover, that in this passage Maestlin — so well-versed in the Prutenic and Alphonsine Tables, as he wishes to appear, being one who studies to examine everything through tables not only diligently but even inquisitively — has been so easily led into error (evidently only in order to have something with which to carp at that equation of ours) as to believe, with the common crowd, that the lunations anticipate one day over a span of 304 years, and therefore, once twenty-five times three hundred years are completed — that is, after 7500 years, in which the 4 [days] omitted at each 300 years fill up the number of 100 years — that the equation of the Moon must be made not at the three-hundredth year but at the four-hundredth. In which matter indeed Maestlin has stumbled quite disgracefully. For this manifestly conflicts with all the astronomical tables he so loudly boasts of, in which a single mean lunation is set at 29 days, 12 hours, 44 minutes, 3 seconds, 11 thirds, roughly. From this it follows that the lunations anticipate one day in about $312\frac{1}{2}$ years, as we showed in Chapter 1 of this book — so that, when eight times three hundred years are completed, that is, after 2400 years, the equation to be made at the three-hundredth year is deferred into the following hundredth year, so that it then occurs at the four-hundredth year, just as we have done in the equation-table. And so what he falsely affirms of us can most truly be said of him: namely, that what he here teaches about the lunations is plainly contrary to the astronomical calculation, and can bear no excuse, nor any acquittal from falsehood. For our reckoning (whatever he may say) rightly agrees with the astronomical calculation, and the equation was aptly set up by us between the year 1400 and 1800, as was clear from the earlier example of the year 1723; and likewise between the year 3900 and 4300, the equation of the lunations requiring that in both cases the equation be rejected from the three-hundredth year into the four-hundredth — since the $12\frac{1}{2}$ [days] omitted at every three hundred years had then grown into a total of 100 years, as we demonstrated in Chapter 4 of this book.

[Margin: The childish deception of Maestlin, in that he supposed that in our Calendar, from the year 320 to 800, by three [steps], the Moon anticipates one day over a span of 500 years.]

In this too our adversary was deceived almost childishly: he supposed that he had established that the lunations, from the year 320 to the year 800 — that is, over a span of about 500 years — anticipate by only a single day, because he saw in the table of the equation the capital letter P before the year 800. There he claims that we deliberately clash more seriously with astronomical truth, and that this is by

far the most absurd thing of all, and utterly false in astronomy. Deceived, I say, is he; whereas we, in this passage, have committed no fault in astronomy, nor introduced anything absurd or false into astronomy. For this change of the capital letter P into the small letter a was made rightly and necessarily in the year 800, and not before; since from the year 500 — where we fix roughly the root of the equation (which entirely escaped Maestlin) — with the capital letter P, for the reason adduced above, three hundred years are counted up to the year 800. Let Maestlin therefore be ashamed to censure so impudently what he does not understand, and let him cease at last to provoke us with taunts and mockeries, with which all the pages of his book are sprinkled, and which apply to himself more than to us.

As for his saying that, if the table of the equation is continued back to earlier years through 300-year steps, the capital letter N — not P — agrees with the years of the Council of Nicaea, as appears from the second-to-last table of his equation: this is indeed true, since the epacts of the capital letter N indicate the new and full moons, according to the Church's usage, more correctly than the epacts of the capital letter P do for those times. But it is beside the point. For we did not intend to correct the new moons of the Council of Nicaea, but only to indicate on what days at that time they were shown by the golden numbers — which is accurately supplied by the epacts of the capital letter P, as is clear from the above. But that, as regards the Church's usage, the Paschal full moons are more correctly indicated for the years of the Council of Nicaea by the epacts of the capital letter N than by those of the capital letter P, will be plainly established from the table of 19 years around the time of the Council of Nicaea, which will follow shortly. For since in it the epacts of the capital letter P present the fourteenth Paschal moons nearly two full days before the mean oppositions, who will doubt that the epacts of the capital letter N — which in the Calendar are one day lower — more suitably display those same fourteenth Paschal moons? But, as we have said, this does not overturn our equation, which we intended, but only confirms what we have declared more than once: that the golden numbers of the Council of Nicaea indicated the new moons — and from these the fourteenth Paschal moons — earlier than they should have; and that therefore the root of the equation was rightly fixed at the year 550 rather than at the years of the Council of Nicaea. Wherefore with the fullest right we prefixed the capital letter P to the year 320, and not the capital letter N, so that indeed the new moons of the epacts would not differ from the new moons of the golden numbers of that time. But evidently Maestlin — a better Grammarian here than Astronomer — since he was wholly ignorant of this root of our equation, supposed that we commit this enormous solecism (for so he speaks): namely that, in assigning the equation of the Moon of

one day to the year 500, we did not change the capital letter P, from the year 320 up to the year 800, into the small letter a. Yet in this he himself commits an enormous solecism in the ecclesiastical computus, not understanding the concord that must be established between the capital letter P and both the 300th and the 500th year, so that the same new moons may be kept which the Church used at the time of the Council of Nicaea — a concord which he himself wrongly wishes to break, when he removes the letter P from the year 300 and substitutes in its place the capital letter N, as may be seen in the second-to-last table of his equation.

[Margin: Maestlin wrongly wishes that the capital letter N, and not the capital letter P, ought to have been assigned to the year of the Council of Nicaea.]

FINALLY, it is utterly false, what he asserts: that the capital letter P is rightly prefixed in the new Calendar neither to the year 500 nor to the year 300, but that the capital letter M ought to be prefixed to both years. For this follows only from the equation of the solar year, applied by him to the years preceding the correction inopportunately and rashly — an equation that, before the year 1582, in which the Calendar was restored, was never used, nor indeed can be applied, if the lunations of past years must be left as they occurred, as the matter itself requires. This is because our equation of the solar year — like no other whatever — cannot in every respect correspond to the past years back to the times of the Council of Nicaea, as we showed in the previous book; so that the equation of the solar year has been applied by Maestlin to past years quite inopportunately, in order that he may investigate the new moons at the time of the Council of Nicaea. For in order that we may understand in what state the lunations were before the correction, it is enough that the reckoning of the equation which was in use be kept.

[Margin: Maestlin improperly applies the equation of the solar year to past years, although it was in use, in order to investigate the letter of the epact-equation of the Council of Nicaea.]

The Moon requires that no mention at all be made of the equation of the equinoxes, so that no day has yet been removed from the year, but the lunations have only anticipated their places in the Calendar — the same length of the year, 365 days and 6 hours, being always retained, which we see the Church always observed before the year of the restoration, however much the year is not really so great. And so, although the equinox in past years continually shifted its seat, nevertheless, since through the table of the equation of the epacts we do not seek its place, but only investigate the days of the new moons, that is enough. Nor

should it move us — a thing Maestlin frequently has in his mouth — that any astronomical calculation whatever fits past times just as it does future ones, if it is rightly set up. For why should our equation of the solar year, to be applied at the four-hundredth year, not fit past years in every respect back to

the times of the Council of Nicaea — that is, why it does not present to us a full ten days to be removed, as many as were removed together from the year 1582, but only 9 — this has been sufficiently set out by us above in Chapter 7 of Book 1. And indeed, even if it did agree entirely, still, by applying the equation of the equinoxes, only the day of the equinox would be found for any past year; but meanwhile the lunations too would be marvelously disturbed by applying their own equation, so that the epacts could not indicate them on the same days on which they occurred, but on the days on which they would have occurred if the equation of both the solar and the lunar year had been applied — provided, however, that the root of both equations be fixed at some definite point; which happens also for future years. For whether the equation of the solar year keeps entirely to 21 March or not, the equation of the Moon, applied at the same time, nonetheless yields the new moons on those days on which they truly occur, as far as the usage of the Church is concerned. To this is added that, since in the year 1582 ten days were removed together, a descent was made in the expanded table through ten lines of epacts, because by that many days the new moons, on account of that removal, occur later. But if the equation of the solar year were accommodated to past years, so that those ten days were consumed not all at once but gradually, a change of ten lines would not on that account occur in the epacts, since the index letter is not always changed when an intercalary day is omitted, but sometimes the same index letter is retained — as happens in Maestlin's own last equation-table at the years 500, 1100, 1400 — indeed, sometimes a return is made to the higher letter, on account of the retention of the intercalary day and the equation of the Moon then to be applied, as happens in the same table at the year 800.

But, to test in what way the lunations — even if disturbed by the equation of both years applied to past years — correspond to the astronomical calculation, let us fix the root of both equations at the year 500, when already the capital letter P displayed the new moons more correctly, according to the Church's usage, than it did at the time of the Council of Nicaea, as we have said. This being posited, the equation-table will stand as follows.

| Index | Anni Dñi | Biss. | Lunar mark |
|-------|----------|-------|------------|
| P | 500 | Biss. | |

| Index | Anni Dñi | Biss. | Lunar mark |
|-------|----------|-------|------------|
| N | 600 | | |
| M | 700 | | |
| M | 800 | | ☾ |
| M | 900 | Biss. | |
| H | 1000 | | |
| H | 1100 | | ☾ |
| G | 1200 | | |
| G | 1300 | Biss. | |
| G | 1400 | | |
| F | 1500 | | ☾ |
| E | 1600 | | |

Let the year 1589 then be proposed, whose golden number is 13. Its epact from this table is xv, placing its fourteenth Paschal moon on 29 March — on which day the mean opposition occurs around noon, if account is taken of the 8 intercalary days then omitted, according to the prescription of this table. Here it is manifest that the fourteenth Paschal Moon agrees with the astronomical calculation, whether the equation of the solar year keeps the equinox to 21 March or throws it onto another day, provided only that the equation of the Moon is duly set up. The demonstration of this matter is as follows. The calculation from the astronomical tables yields the mean opposition, as it truly occurs in the heavens, if no intercalary day has been omitted. If, then, to that calculation the removed days are added — the days by which, of course, the lunations have descended toward the ends of the months — the mean opposition will be found to agree with the applied equation of the solar year, whether that equation be true and exact or not true. Therefore, if the equation of the Moon is then applied (which cannot rightly be applied unless the equation of the solar year is observed at the same time, as is clear from the construction of the equation-table in Chapter 4), so that the nineteen-year cycle is equated, the Cycle will necessarily correspond to the astronomical calculation, if it corresponded before, prior to when both equations were in use. You see therefore, Maestlin, that it can in no way happen that, with the equation of both years applied to past years, that same index letter should be yielded which truly, at the times of the Nicene Council, presented the epacts as indices of the new moons. Rightly, therefore, has the table of the equation of the epacts been established by us. If you wish to tear it up from the roots, you certainly need other weapons than those with which you have fought so far. For

those, as you see, are too weak, and altogether of lead. *Here is Rhodes, here is the leap.* There is no ground, then, for your objection that the author of the new Calendar did not exert himself much in examining the astronomical calculation precisely, since his calculation does not disagree with the astronomical one, as we have shown. If, then (to address you in your own words), you have not understood these things, judge for yourself whether you are worthy that any authority be granted you in the rest — and that on account of your shameful or affected ignorance; but if you were aware of these things, shall I not say that you are to be devoted to the Furies (which you invoke upon the author), since you maliciously cast a deception over all Germany and over the whole world of Christians?

But grant that this — in the matter of the equation of the epacts — belongs to your impudence and rashness; that other charge, which belongs either to malice or to ignorance, is this: that you object that our epacts, according to the capital letter P of the expanded table, do not correctly indicate the Paschal limits at the time of the Council of Nicaea — whereas our epacts yield exactly the same limits as the golden numbers of the old Calendar. As if you would now impugn not this Calendar of ours, but the old one approved by the Fathers of the Council of Nicaea — against your own opinion, by which everywhere you try to prefer the old Calendar to the new. To this is added that you again take the full moon for the fourteenth Moon, or Paschal limit, and therefore wrongly call false all the Paschal limits that precede the mean oppositions by a single day — while you yourself are deceived. For we have demonstrated the contrary of this above, from the received usage of the Church and from the weightiest authors. But so that all may see how the Paschal limits stood at the times of the Council of Nicaea, and that the same limits are indicated both by the golden numbers of that same Council and by our epacts, we have set out a table of 19 years around those times, which you too presently bring forward. We have, however, omitted the epacts and Paschal limits according to your index letters N and M (capital), because these are irrelevant, since they are falsely assigned by you to those years, as we showed a little before.

[Margin: That Maestlin fights in vain against the fourteenth Paschal moons of the new Calendar around the times of the Council of Nicaea, since they do not differ from the fourteenth Paschal moons of the golden numbers of that time.]

From this table it is clear that the epacts of the index letter N indicate the fourteenth Paschal moons more correctly, at the time of the Council of Nicaea, than the epacts of the letter P, since the fourteenth Paschal moons of the former

are one day later than the fourteenth moons of the latter. This is what we noted a little before.

The following table gives, for the years 323–341 (one complete nineteen-year cycle), the golden numbers, the epacts by the index letter P, the Paschal fourteenth Moons, and the mean full moons.

| Anni Domini | Aurei numeri | Epactæ secundū literā indicē P | Lunæ XIII Paschales | Plenilunia media (D · H · M) |
|------------------|--------------|--------------------------------|---------------------|---|
| 323 | 1 | vij | 5 Apr. | 6 · 22 · 45 |
| 324 | 2 | xix | 25 Mar. | 26 · 7 · 33 |
| 225 [recte: 325] | 3 | * | 13 Apr. | 14 · 5 · 6 |
| 326 | 4 | xj | 2 Apr. | 3 · 13 · 54 |
| 327 | 5 | xxij | 22 Mar. | 23 · 22 · 43 |
| 328 | 6 | ij | 10 Apr. | 11 · 20 · 16 |
| 329 | 7 | xiiij | 30 Mar. | 33 · 5 · 5 [day 33 impossible — see note] |
| 330 | 8 | xxv | 18 Apr. | 19 · 2 · 38 |
| 331 | 9 | vj | 7 Apr. | 8 · 11 · 26 |
| 332 | 10 | xvij | 27 Mar. | 27 · 20 · 14 |
| 333 | 11 | xxviiij | 15 Apr. | 15 · 17 · 47 |
| 334 | 12 | ix | 4 Apr. | 5 · 2 · 36 |
| 335 | 13 | xx | 24 Mar. | 25 · 11 · 24 |
| 336 | 14 | j | 12 Apr. | 12 · 8 · 57 |
| 337 | 15 | xij | 1 Apr. | 1 · 17 · 46 |
| 338 | 16 | xxiiij | 21 Apr. | 22 · 2 · 34 |
| 339 | 17 | iiij | 9 Apr. | 10 · 0 · 17 |
| 340 | 18 | xv | 29 Mar. | 29 · 8 · 56 |
| 341 | 19 | xxvj | 17 Apr. | 17 · 6 · 28 |

That the Paschal fourteenth Moons of the epacts are the same as those of the golden numbers in the time of the Council of Nicaea is clear from this: the epacts are written against the very days of the new Calendar that the golden numbers occupied in the old Calendar, as is plain from the preceding thirty Calendars of

the golden numbers set in the Calendar under the capital letter P. From this it follows that you object against us not only falsely but even impudently when you assert that, of these nineteen Paschal termini — which do not differ from the termini of the golden numbers of the Nicene Council — only one is true and eighteen are erroneous. For only the twelve termini of these twelve years — 323, 324, 325, 326, 327, 328, 329, 330, 331, 334, 335, 338 — anticipate the mean oppositions by more than is proper, that is, by nearly two days; the other seven anticipate by a single day only, as reason requires. We have explained above the cause of this anticipation: the new moons of the golden numbers of the Nicene Council fall on almost exactly those days on which, by their mean motion, they occur in the heavens — something we have taught must be avoided in every cycle for the use of the Church, and have in fact avoided in our own cycle of epacts, as can be understood from what has been said. But however that may be, at least this ought to be settled among everyone: that in this passage Maestlin is not contending against the new Calendar, but against the arrangement of the golden numbers in the Calendar at the time of the Nicene Council. For the new Calendar, in order rightly to perform its office, only declares in what state the new moons and the Paschal fourteenth Moons stood according to the golden numbers in the time of the Nicene Council; it does not approve them — indeed it could not approve them, since the golden numbers then displayed the new moons earlier than is proper, as we have taught in its place.

[Margin: Maestlin falsely charges us with having so assigned the equinox to 21 March as to hold that this is its only proper seat.]

But this is Maestlin's plain malice, that he cunningly slanders — as though it were the head of the whole matter — that the equinox has been rashly recalled by us to 21 March, where it had been fixed by the Council of Nicaea; just as if (as he cavils after his manner) we wished this to be the sole proper seat of the vernal equinox. And here, so that we may understand how well and piously he judges of religion and the Church, he doubts whether the Christian Church ought to obey that decree of the Nicene Council. But since we are not here dealing with the Faith or with religion, let us set aside this doubt of his — which smacks of heresy — and defend the new Calendar so far as it concerns astronomical matters. Therefore the equinox has been restored by us to 21 March not because we judged that day necessarily to be the sole proper seat of the vernal equinox, but so that all the Paschal termini which that most holy and ecumenical Council of Nicaea appointed might be kept whole and untouched, and so that no novelty might be introduced into the Christian world in the feast of Easter, as was fully explained in Book I, Chapter III.

[Margin: Five errors to be avoided in the celebration of Easter.]

Besides this, he tries to make the new Calendar hateful to the whole world, on the ground that in the celebration of Easter it has not avoided five notable errors — errors which we most of all wish to be shunned as though they were some monstrous reefs, and in whose avoidance in this correction we greatly glory. The errors to be guarded against in the feast of Easter can be reduced to these five: I. that it not be celebrated on the fourteenth Moon, along with the heretical Quartodecimans; II. that it not be kept before the fourteenth Moon, which would be still more absurd; III. that it not follow the twenty-first Moon, that is, that it not fall in the fourth week of the lunar month; IV. that it not be found in the last month, whose terminus, namely, precedes the vernal equinox; V. that it not be thrown back into the second month.

[Margin: Easter, in certain years which Maestlin adduces, does not fall on Luna 14, as he falsely supposes, but on the mean opposition — two years excepted.]

First, then, Maestlin says that in the new Calendar the Paschal Sunday not rarely falls on the full moon itself, that is, as we put it, on the fourteenth Moon. For he always persists in this error, that the mean opposition, or fourteenth Moon [text of the following clause abraded/short — reason not legibly stated] [?]. But we have already refuted this abundantly above. He brings forward these years: 1503, 1507, 1514, 1531, 1551, 1555, 1558, 1578, 1582, 1598, 1609, 1622, 1693, in all of which he affirms that the Paschal Sunday falls on the fourteenth Moon — which is false. For they all fall on the mean opposition, and hence are legitimate by the decrees of the Fathers, so that the first error can have no place in them, as is evident in the table below.

[LIB. SECVNDI — printed p. 110] But from the years before the correction Maestlin removes 10 days, which is indeed beside the point — as we said above — since in those years Easter was not celebrated after the removal of the 10 days, in the way in which they are laid out in this table. Yet, to gratify him, suppose the 10 days were removed, and let us see whether he speaks the truth. In two years only, 1503 and 1514, Easter would have been celebrated a little earlier than is proper, had the 10 days been taken away. The cause of this anticipation is that those years do not require the subtraction of 10 days. For since the root of this subtraction of 10 days agrees with the year 1600 (as appears from the table of equation), so that from this point 400 years are always counted,

[Margin: In the same years 1503 and 1514, Easter was also rightly celebrated before the correction, provided the 10 excepted days are not reckoned, as is fitting.]

| Anni Domini | Aurei numeri | Epa ctæ | Lit. Dñic. | Termini Paschales | Pasc ha | Plenilunia media (D · H · M) |
|-------------|--------------|---------|------------|-------------------|---------|------------------------------|
| 1503 | 3 | xxiij | D | 21 Mar. | 22 Mar | 22 · 9 · 53 |
| | | | | | . | |
| 1507 | 7 | vij | F | 6 Apr. | 7 Apr. | 6 · 22 · 32 |
| 1514 | 14 | xxiii j | D | 18 Apr. | 19 Apr. | 19 · 2 · 29 |
| 1531 | 12 | ij | D | 11 Apr. | 12 Apr. | 11 · 12 · 40 |
| 1551 | 13 | xiiij | G | 31 Mar. | 1 Apr. | 0 · 14 · 1 |
| 1555 | 17 | xxvi j | B | 16 Apr. | 17 Apr. | 16 · 2 · 44 |
| 1558 | 1 | j | E | 12 Apr. | 13 Apr. | 12 · 17 · 53 |
| 1578 | 2 | xij | A | 1 Apr. | 2 Apr. | 1 · 19 · 15 |
| 1582 | 6 | xxvj | C | 17 Apr. | 18 Apr. | 17 · 7 · 57 |
| 1598 | 3 | xxiij | D | 21 Mar. | 22 Mar | 21 · 20 · 36 |
| | | | | | . | |
| 1609 | 14 | xxiii j | D | 18 Apr. | 19 Apr. | 18 · 13 · 11 |
| 1622 | 8 | xviiij | B | 26 Mar. | 27 Mar | 26 · 10 · 39 |
| | | | | | . | |
| 1693 | 3 | xxiij | D | 21 Mar. | 22 Mar | 21 · 7 · 18 |
| | | | | | . | |

— from those years which are more remote from the year 1600 and nearer to the year 1500, only 9 days, and a little more, should be removed, as we said above; and thus Easter would then fall either on the opposition itself, or a little after, as happens in the other years of this table. But if the 10 days are not thought of as removed from those two years, the Paschal Sunday of each will fall on 16 April — on which days Easter was in fact celebrated in those years before the correction of the Calendar. The Paschal terminus of the earlier year will fall on 10 April, almost a whole day before the mean opposition, and immediately after the Dominical letter, which is A; but the Paschal terminus of the later year falls on the Dominical letter itself, which is also A, and on almost the middle of the opposition itself; and therefore in both cases Easter

[Margin: The cycle cannot be faulted, even if occasionally Easter falls on Luna 14.]

| Anni Domini | Aurei numeri | Epa ctæ | Lit. Dñic. | Termini Paschales | Pasc ha | Plenilunia media (D · H · M) |
|-------------|--------------|---------|------------|-------------------|---------|------------------------------|
| 1503 | 3 | iiij | A | 10 Apr. | 16 Apr. | 10 · 22 · 37 |
| 1514 | 14 | iiij | A | 9 Apr. | 16 Apr. | 9 · 2 · 29 |

was celebrated after the mean opposition, yet, as is fitting, in the third week of the lunar month — that is, before the last quadrature aspect of the Moon — as appears in the table set out for the two years 1503 and 1514.

[Margin: Fewer errors are contained in the epact-cycle of the new Calendar than in the golden-number cycle, even about the time of the Nicene Council.]

Where, then, Maestlin, do you see Easter celebrated on the fourteenth Moon in any of your thirteen years? You are truly unworthy of an answer, since you lie so conspicuously in this examination of yours, so as to impose upon the whole world and to thrust out the new Calendar with importunate shouts and outcries, as though it were stuffed with a thousand errors. But truth is strong, and yields to no terrors; and it is well established that it is generally those whose cause is the weaker who fight by clamor. Now if it should sometimes happen that, by the prescription of the new Calendar, Easter falls on the fourteenth Moon — that is, on the day before the mean opposition (which, as we said above, can occur in our cycle, though very rarely) — this is not to be charged as a fault to this our new cycle of epacts, but to all cycles whatsoever; for none, however skillfully arranged in a Calendar, can agree so exactly with the celestial motions as never at some time to depart from the truth. Yet we do not hesitate to affirm this of our Calendar

with certainty: that far fewer errors are contained in it than in the old one approved by the Fathers of the Nicene Council, as sufficiently appears from what we have taught before, where within the space of a few years the most holy Easter was more often celebrated on the fourteenth Moon.

[Margin: Maestlin's cavil, that Easter can fall on Luna 14 in the new Calendar.]

It is also certain that in those thirteen years just brought forward — which Maestlin investigated with the greatest zeal in order to convict the new Calendar of falsity — no error is found except that of Maestlin himself, who rashly calls the mean opposition the fourteenth Moon.

Next, our adversary says that our Easter not rarely falls on the thirteenth Moon — that is, before the full moon, which he wrongly calls the fourteenth Moon, as was said above. But who does not see that this is sheer calumny? For if Easter scarcely, or at any rate very rarely, falls on the thirteenth Moon, as was just said, how can it be that it should be found on the thirteenth Moon? He will certainly never show this, not even if he strains every nerve, not only of talent but of cunning. And indeed, if he were to find some year (which I do not believe) in which this happened,

[CAPVT VII — printed p. 113]

— the answer has already been given a little before: it must be ascribed to the nature of cycles, which is such that in none can all inconveniences be avoided. For as regards these two years, 1527 and 1598, in which he asserts that this error has been committed, he cavils splendidly, after his manner. For in the later year, that Easter was legitimately celebrated by the decree of the Council of Nicaea, so far as concerns the mean motion, is clear from the preceding table of thirteen years. But in the earlier year, in which the golden number is 8 — the epact (once the 10 days have first been removed, which the adversary took away out of his own caprice, even though that year was before the correction) being xviii, the Dominical letter B, the Paschal terminus 26 March, and Easter itself 27 March — the decree of the Nicene Council is likewise observed, since Easter is celebrated on the mean full moon itself, which occurs on 26 March at 23 hours 57 minutes after noon. But that same year's Easter is exhibited far more exactly by the new Calendar according to the ecclesiastical laws, if the 10 removed days are taken away, as reason requires, since it precedes the correction. For the golden number was then 8, the epact xxviii, the Dominical letter F, the fourteenth Moon on 15 April, Easter on 21 April, and the opposition on 15 April at 12 hours 41 minutes after noon — so that Easter was then celebrated after the mean full moon, yet

before the second quadrature aspect of the Moon, as the Fathers and the Councils prescribe.

[Margin: Easter, on account of the imperfect nature of the cycles, must of necessity sometimes fall at the beginning of the fourth week.]

As regards the third error — if it is to be called an error, since it cannot be avoided in any cycle — we frankly confess that, by Canon 2 of the new Calendar, on account of the necessary postponement of the new moons, it sometimes happens that Easter falls at the beginning of the fourth week, that is, on the twenty-second Moon, or on the later quadrature aspect of the Moon. But this error is of no such moment that on its account the new moons ought to be shown by the epacts one day earlier in the Calendar; for from that anticipation there would follow almost innumerable absurdities far greater. For most often the new moons of the cycle would precede the conjunctions, both true and mean, and frequently the solemnity of Easter would fall on the fourteenth Moon, as is evident from what we have said. Maestlin therefore raises nothing new against us in this passage, since — on account of the greater absurdities we have enumerated — the epacts must be so arranged that the new moons more often follow, for the most part, the celestial new moons; and we accordingly admit that Easter is sometimes, though rarely, deferred for one week. In this our Maestlin shows himself scarcely fair, who now makes so much of any necessary error whatsoever — and one that is admitted — when he himself thrusts upon the whole world so many and so foul errors. But it must not be passed over that Maestlin is here inconsistent with himself. For whereas in the earlier passages he always cried out, though falsely (not understanding the Church's sanctions and custom concerning the celebration of Easter), that Easter ought not to be celebrated on the mean full moon, here nevertheless, in these three years — 1629, 1680, 1700 — whether through a lapse of memory or rather through the inconstancy of his lying, he contends that it ought to be celebrated on the mean full moon, only in order to show that in those years we defer Easter into the following week. But this is plain from the table below, where Maestlin's own Easter falls on the mean full moon — which before he was unwilling to allow.

[Margin: Maestlin's inconstancy and self-contradiction.]

| Anni Domini | Aurei numeri | Epa ctæ | Lit. Dñic. | XIII Paschales | Pascha Mæstlini | Plenilunia media (D · H · M) |
|-------------|--------------|---------|------------|----------------|-----------------|------------------------------|
| 1629 | 15 | v | G | 8 Apr. | 8 Apr. | 7 · 14 · 32 |
| 1680 | 9 | xxi | GF | 14 Apr. | 14 Apr. | 13 · 9 · 49 |

| Anni
Domini | Aurei
numeri | Epa
ctæ | Lit.
Dñic. | XIII
Paschales | Pascha
Mæstlini | Plenilunia media
(D · H · M) |
|----------------|-----------------|------------|---------------|-------------------|--------------------|---------------------------------|
| | | x | | | | |
| 1700 | 10 | ix | C | 4 Apr. | 4 Apr. | 3 · 11 · 10 |

For all these full moons are to be assigned to the days next following — the first to the eighth, the second to the fourteenth, and the third to the fourth — since they occur after sunset. From which it comes about that those feast-days, by Maestlin's own reckoning, fall on the full moons themselves — which nevertheless he has hitherto always cried out to be absurd, as we said just now. If, then, he wished to be consistent with himself, he would at any rate relax the new Calendar for deferring those Easter-days from the mean full moons to the following Sunday; although in fact we do not defer Easter then because it falls on the mean opposition, but because the fourteenth Moon, found by the epacts, runs into a Sunday. But it is no wonder that Maestlin is inconsistent with himself. For so great was his eagerness in finding fault that, blinded by the impulse of attacking, he did not see that he brings forward things at war with one another.

[Margin: Maestlin wrongly charges the new Calendar with often throwing Easter back into the last month and into the second.]

Furthermore, that the new Calendar often defers the celebration of Easter, now into the last month, now into the second (which are the last two errors), Maestlin confirms by no other reasoning than by the earlier examples, by which he supposed that, when one passes from one line of the expanded table of epacts to another, Easter is not rarely transferred from the second month into the last, and from the first into the second. To this he also adds that, not only for that reason can Easter sometimes be celebrated in the last or in the second month, but also before the vernal equinox — namely when the equinox has, as he falsely supposes, slipped back to 27 March, and the fourteenth Moon is found on the 21st, the day appointed for the equinox, or 4 or 5 days after the 21st, and finally a Sunday falls between that fourteenth Moon and 27 March. But to this too an answer has already been given above. For, in order that Easter not be said to fall in the twelfth month, it is enough — as pertains to the most ancient usage of the Church — that its Paschal terminus, or fourteenth Moon, not run before 21 March, the day assigned to the equinox, even though the true equinox sometimes follows the 21st and that fourteenth Moon. Likewise, in order that Easter cannot be said to fall in the second month, it is enough if the immediately preceding fourteenth Moon in March comes before that same 21st day of the equinox, even though the true equinox sometimes occurs before that fourteenth Moon and

before the 21st — which indeed can happen, as we have more than once granted above. Nor was the Church ever bound by these astronomical subtleties; it is enough if she prefixes some fixed day, such as 21 March, to the equinox, beyond or short of which the equinox does not stray far. Indeed, whether he will or not, Maestlin must necessarily admit that in a bissextile year Easter can be celebrated in the second month, and that the same can fall in the twelfth in the third year after the bissextile, as we demonstrated above — even if the equinox never receded further from 21 March than the 6 hours omitted in a common year require.

[Margin: According to the usage of the Church, Easter can sometimes be celebrated in the last month and in the second, on account of bissextile and common years, even if the Julian year were the true one.]

[Margin: That Maestlin, once again by way of slander, faults the epacts of the new Calendar as reduced to the times of the Council of Nicaea.]

Moreover, so as never to run out of grounds for censure and slander, he returns yet again to those same nineteen years around the time of the Council of Nicaea. In these, as I said above, he holds not only that the fourteenth Moons (that is, the Paschal terms) are for the most part false, but also that Easter itself was repeatedly appointed to be celebrated contrary to the decrees of the Fathers — namely, on the full moon itself, or even before it. But since it has been abundantly demonstrated, both in this book and in the preceding one, that Easter can lawfully be celebrated on the full moon; and since, when Easter was on occasion celebrated before the full moon at that period, this is not to be laid to the charge of this cycle of epacts of ours, nor of their equation, but arises from the fact that the golden numbers then showed the new moons earlier than was proper — and it was to the arrangement of those golden numbers that we tried to make the equation of our epacts conform, so that it might match (this indeed is why we placed the capital letter P before the year 320) — there is no reason to waste any more time uselessly on this point. And from these errors that Maestlin has rashly thrown at the new Calendar it readily appears how prudent, how careful a corrector and reformer of the world he is — a man who has so often betrayed his own ignorance in ecclesiastical matters, and so often erred himself, every time that, straining to produce some novelty, he has cast errors in our teeth.

[Margin: That Maestlin maliciously faults the solar cycle as equated in the new Calendar.]

LASTLY, so as to leave nothing untouched, Maestlin — that most ferocious adversary and disparager of the new Calendar — attacks in hostile fashion the ancient cycle of Dominical letters of 28 years, which is perpetual enough in the new Calendar, provided that in every span of 400 years three intercalary days are omitted. He carps at the equation of this cycle in Chapter 1 of his examination (although we have deferred our reply up to this point), asserting that from it a false Dominical letter is derived for the years preceding the correction — that is, if the equation of the equinox is applied to the years now past (which he also tried to do above in the case of the equation of the epacts), and if an equation of the solar cycle is set up like the one applied in the Calendar after the correction. But who here would not laugh, who would not marvel at the man's absurdities — not to say his malice? For since, by the equation of the solar year prescribed in the Calendar, the Dominical letter agreeing with any given year before the correction is in fact found — as he himself testifies — for what reason does he contrive a new equation according to his own whim and caprice, one by which the Dominical letters are thrown into extraordinary confusion? I see no reason, except that he wants by every means, if he can, to make the new Calendar out to be false and altogether useless.

[Margin: Why the equation of the solar cycle cannot be made to fit the past years exactly.]

For in thinking that the reckoning of our equation ought to be carried back into the past years just as well as forward into future ones, he is gravely mistaken. For since the equation of the solar year — by which in any span of 400 years three intercalary days are omitted — does not fit exactly the years near the Council of Nicaea, on account of the uneven magnitude of the solar year, as was set out in Book I, Chapter VII, it is useless to try by it to find the Dominical letter that was then in use in any given year; for from the birth of CHRIST down to the year of the correction the order of the Dominical letters was never interrupted. In time to come, however, once the equation of the equinox has to be applied, this equation will have its place, because with every omission of an intercalary day the series and order of the Dominical letters must be interrupted, even if that equation of the equinox does not answer exactly and entirely to the celestial motions, as we set forth in Chapters V, VI, and VII of the first book. Let him therefore prove this, if he wishes to accomplish anything — though he never will: namely, that the equation of the solar cycle does not correctly indicate the Dominical letter for future years, in which intercalary days are genuinely omitted and the order of Dominical letters is consequently of necessity interrupted. And so what was said above about the equation of the epacts — that if it, together with the equation of

the equinox, is carried back into the past years — the same must be said here of the equation of the solar cycle, if it, together with the equation of the equinox, is applied to the past years: namely, that it throws the order of the Dominical letters into extraordinary confusion, so that it in no way yields those Dominical letters that were genuinely in use in the past years (unless perhaps the equation of the equinox offers up just as many days to be removed as were in fact removed down to that time from which the equation of the equinox began), but rather those that would have had to be used had this equation of the solar year been applied — provided only that the root of the equation is fixed to some definite year.

Now if the equation of the solar year established by us were to fit in every respect the times of the Council of Nicaea — that is, if it yielded exactly 10 days to be removed — then without doubt the numeral index-letter placed there, which would then be V, would show the Dominical letters correctly. But to make this clear, we must explain in what way the ancient cycle of Dominical letters has been equated in the new Calendar. The equation, then, is as follows.

CYCLI SOLARIS, SIVE LITERARVM DOMINICALIVM antiquus 28. annorum perpetuus.

(The ancient perpetual solar cycle, or cycle of Dominical letters, of 28 years.)

Top block:

| V | | | | VII | | | | II | | | | IV. | | | |
|-----|---|---|-------|-----|---|---|---|-----|---|---|---|-----|---|---|---|
| g/f | e | d | d [?] | b/A | g | f | e | d/c | b | A | g | f/e | d | c | b |

Bottom block:

| VI | | | | I | | | | III | | | |
|-----|---|---|---|-----|---|---|---|-----|---|---|---|
| A/g | f | e | d | c/b | A | g | f | e/d | c | b | A |

TABVLA AEQVATIONIS CYCLI SOLARIS ANTIQVI.

(Table of the equation of the ancient solar cycle.)

[Printed page: 113]

The table runs as three panels across the leaf, read as one continuous list; each entry gives the numeral index, the year of the Lord (Anni Dñi), and a bissextile mark (Biss.) where applicable. The full-width note "Detractis 10 dieb." (10 days having been subtracted) falls within the first panel, after the year 1582.

| Index | Anni Dñi | Biss. |
|---------------------------|----------|-------|
| V | 1 | |
| V | 1582 | |
| <i>Detractis 10 dieb.</i> | | |
| I | 1582 | |
| I | 1600 | Biss. |
| II | 1700 | |
| III | 1800 | |
| IV | 1900 | |
| IV | 2000 | Biss. |
| V | 2100 | |
| VI | 2200 | |
| VII | 2300 | |
| VII | 2400 | Biss. |
| I | 2500 | |
| II | 2600 | |
| III | 2700 | |
| III | 2800 | Biss. |
| IV | 2900 | |
| V | 3000 | |
| VI | 3100 | |
| VI | 3200 | Biss. |
| VII | 3300 | |
| I | 3400 | |
| II | 3500 | |
| II | 3600 | Biss. |
| III | 3700 | |
| IV | 3800 | |

[Margin: Perpetual construction of the table of the equation of the Dominical letters.]

Since the order of the Dominical letters is necessarily interrupted in the common centennial years — because then a single letter runs on, not a double one — the

ancient cycle of letters cannot always begin from the cell of the letters g, f, as it did before the correction, but now from b, A; now from d, c; or f, e; or A, g; or c, b; or e, d — in this order. Before the Calendar was restored, the cycle always took its start from the first cell, of the letters g, f, so that when the solar cycle was 1 the Dominical letters were g, f; when the cycle was 2, the Dominical letter was e; and letter d answered to cycle 3, and letter c to cycle 4, and so on. But after the correction of the year, on account of the 10 days removed, the cycle will have to begin from another cell of two letters — namely, from the one that holds the tenth place after the letters g, f — that is, from the letters c, b of cell 21, since letter c is the tenth after g, as appears here: g, A, b, c, d, e, f, g, A, b, c; just as letter b is the tenth after f, as appears here: f, g, A, b, c, d, e, f, g, A, b. The reason for this is as follows: since the Dominical letters in the Calendar follow one another in the natural order of the letters, it comes about that in the year of the correction, after the day sacred to St. Francis — that is, after the 4th of October, to which letter d is assigned — in place of the following letter e, assigned to the 5th day, the tenth letter after it was taken, namely letter A of the fifteenth day, as appears here, since the ten letters e, f, g, A, b, c, d, e, f, g, answering to the ten days removed, were omitted in that year. And for the same reason, after any Dominical letter in the Calendar, the one to be taken is that which stands as many letters distant from it as there are days removed. Thus if, for example, one day is removed, the letter to be taken after A is c, in place of letter b, which would have to be taken after A if that day were not removed. But if two days are removed, then

| | | | | | | | | | | | | | | | |
|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 |
| Dies Octob. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| Lit. Domin. | A | b | c | d | e | f | g | A | b | c | d | e | f | g | A |

letter d is to be taken in place of letter b, which would have to be taken after A were those two days not removed; for letter d occupies the second place after b. And the same reasoning holds in the other cases. Upon the cell of the letters c, b, then — which we said was to be taken after the removal of the 10 days — we shall superimpose the numeral index-letter I, and we shall prefix it to the year 1582 after the 10 days had been subtracted, to signify that the cycle then takes its beginning from cell 21; that is, that in the first year of the solar cycle the Dominical letters are c, b; in the second year the Dominical letter is A, and so on. The same numeral index I we shall set against the year 1600, because, since that year is bissextile, the cycle does not change its beginning, and no interruption of the Dominical letters occurs. Then, because in the year 1700 an intercalary day is omitted, the cycle will begin from the letters d, c of a new cell, since each letter follows next after each of c, b of cell 21 in the alphabet — namely d after the letter

c, and c after the letter b. Upon this new cell, therefore, we shall superimpose the index number II, and we shall prefix the same to the year 1700, to indicate that in the year 1700 the cycle takes its beginning from the ninth cell, of the letters d, c. Again, in the common year 1800 the cycle will have to begin from cell 25, of the letters e, d, which follow next in the alphabet after the letters of the ninth cell, d, c; and accordingly we shall assign the index number III both to cell 25 and to the year 1800. By the same reasoning, in the non-bissextile year 1900 the cycle will begin from the thirteenth cell, of the letters f, e, which follow next after the letters e, d of cell 25; and therefore the Index number IV must be set against both cell 13 and the year 1900. This index number will not be changed in the bissextile year 2000. Then in the non-bissextile year 2100 the cycle will take its beginning from the first cell, of the letters g, f, which follow next after the letters f, e from which the cycle began in the year 2000; and therefore the index number V must be prefixed to the first cell and to the year 2100. In the year 2200, moreover, which is likewise common, we shall assign the index number VI, and superimpose the same upon the seventeenth cell, of the letters A, g, because these letters follow next after the letters g, f of the first cell. And in the non-bissextile year 2300 we shall set the index number VII against cell 5, of the letters b, A, which follow next after the letters A, g; and this same index number VII will also have to be assigned to the bissextile year 2400. Afterwards, in the non-bissextile year 2500, the numeral index-letter I must again be assigned, because the cycle then begins once more from cell 21, of the letters c, b, which follow next after the letters b, A. And in this way the same index numbers will be repeated in the years to come, assigning nonetheless to the bissextile centennial years the same index numbers as were assigned to the immediately preceding non-bissextile centennial years. Lastly, to the years before the correction we assigned the index number V, which is superimposed upon the first cell — the cell from which the cycle always took its start before the restoration of the year.

[Margin: By what method the Dominical letter is found from the perpetual cycle for any proposed year.]

The use of this table is as follows: the first year of the solar cycle is to be assigned to that cell over which is placed the same index number as is prefixed to the proposed centennial year; the second year of the cycle is to be given to the next cell, and so on. For the cell into which the solar cycle of the proposed year falls will yield the Dominical letter — in common years only the lower letter is to be taken. For instance, in the year 1589 the solar cycle is 2. Since therefore the num-

-eral index I, set after the correction against the year 1582, is placed over cell 21, cycle 2 will fall into cell 22, of letter A, which will be the Dominical letter in that year. Again, in the year 1900 the solar cycle is 5, and the index number 4 is superimposed upon the thirteenth cell. Therefore cycle 5 will fall into cell 17, which is the fifth counting inclusively from the thirteenth; and consequently the Dominical letter of the year 1900 will be g, the lower one. Lastly, in the year 325 the solar cycle is 26, and the index number V is over the first cell. And since cycle 26 falls into cell 26, where letter c is, c will be the Dominical letter of the year 325.

NOW, to make it plain that Maestlin has rashly — not to say maliciously — carried back this table of the equation to the past years, as if the 10 days were not removed all at once but consumed little by little, we shall set out his table of the equation, which is of this sort.

TABVLA AEQVATIONIS CYCLI SOLARIS ANTIQVI, tanquam ea iam olim fuisset vsitata.

(Table of the equation of the ancient solar cycle, as though it had already long been in use.)

Read as three panels across the leaf, forming one continuous list:

| Index | Anni Dñi | Biss. |
|-------|----------|-------|
| III | 1 | |
| IV | 100 | |
| V | 200 | |
| VI | 300 | |
| VI | 400 | Biss. |
| VII | 500 | |
| I | 600 | |
| II | 700 | |
| II | 800 | Biss. |
| III | 900 | |
| IV | 1000 | |
| V | 1100 | |
| V | 1200 | Biss. |
| VI | 1300 | |

| Index | Anni Dñi | Biss. |
|-------|----------|-------|
| VII | 1400 | |
| I | 1500 | |
| I | 1600 | Biss. |
| II | 1700 | |

Here indeed you see that, before the index number I set against the year 1500, proceeding back toward the beginning of the years of Christ, only nine changes of the index numbers had been made — namely these: VII, VI, V, IV, III, II, I, VII, VI — of which VI is prefixed to the year 300. Since, therefore, not just 9 but 10 days have been removed, what wonder is it that the index number VI does not display the true Dominical letter at the time of the Council of Nicaea? It would necessarily have had to be carried, by change, all the way to the tenth index number V, so that this might offer the Dominical letters that were then in use. But if this equation of Maestlin's had been in use from the Council of Nicaea down to our own age, the root would have had to be fixed in the year 300 — that is, the index number V would have had to be set before the year 300, the number that then genuinely offered the Dominical letters. Yet on this reckoning it would be not the index number I but VII that fell on the year 1500 (if the same centennial years are left bissextile as are bissextile in our equation); and it would indeed at this present time show the Dominical letters, though not those we now use — because not 10 but only 9 days would have been taken away.

[Margin: That Maestlin does not rightly attack the equation of the epacts or of the solar cycle, since he only proves that the equation of the equinox does not entirely agree with the times of the Council of Nicaea.]

FINALLY, while the adversary strives to shake and utterly overturn the equation both of the epacts and of the solar cycle — on the ground that at the time of the Council of Nicaea neither of them fits exactly if it is carried back into the past years — he proves nothing else than that the equation of the equinox described in the first book does not exactly agree with the time of that Council; which we freely grant, and the reason for this we have explained fully and more than fully in the same book. He therefore brings nothing to bear at this point, nor indeed has he dared to disapprove the construction itself of either equation; seeing that he has plainly recognized that the equation of the solar cycle proceeds correctly through the centennial years, so that in the common centennial years the order of the Dominical letters is of necessity interrupted and the cycle takes its beginning from elsewhere, whereas in the bissextile centennial years the same order of

Dominical letters and the same beginning of the cycle are retained — just as he has also rightly understood that the equation of the epacts depends both on the 300 years in which the Moon anticipates by nearly one day, and on the 400 years in which the equinox shifts its seat forward by nearly three days. In this one thing only has he erred: that, along with the common view, he attributed to the anticipation of the Moon 304 years, and not $312\frac{1}{2}$, as the astronomers' tables require. Let him therefore cease to insult us, as though by our equation we did not know how to find the Dominical letters of the years of the Council of Nicaea. For the index number V, which our equation offers us before the correction — that number displays the Dominical letters for all the years preceding the restoration of the Calendar, since before the year of the correction no interruption of the Dominical letters was ever made; so that Maestlin can in no way be excused for his malice and rashness in dragging our equation — by force, against right and lawfulness, "by the hair" (as he himself puts it) — off to the past years. Rather, to convince us that it is false, he ought to have demonstrated that it will prove faulty for future years; which he not only failed to do, but did not even dare to attempt, nor will he ever accomplish it, though he bring all his strength to bear on it and strain every sinew. But clearly this Tübingen mathematician — more like the poets than like the mathematicians — in the manner of the poets, seeking matter, gathers everything from every quarter and fastens falsehoods onto truths. For consider: is it not false — indeed, an impudent lie — that we cannot by our equation (if it be correctly applied to the past years, leaving aside, as we have done, the equation of the equinox, which he nonetheless most inopportunately thrusts in) find the Dominical letter for the times of the Council of Nicaea? Can he be thought, deservedly, anything but a man wholly compounded of fraud and falsehood, who, though he set out to prove that the equation both of the epacts and of the solar cycle prescribed in the new Calendar is utterly empty and faulty, does nothing less than prove this, but aims only at this: to show that our equation of the solar year — which is very far different from that — does not entirely agree with the true celestial motions? This indeed is beside the point, and was more than once freely conceded by us; and we explained the reason why neither our equation, nor any other equation of the solar year that is even and uniform, can in every respect answer to the true motion of the Sun.

BUT the adversary contends with all his might that our equation, if it is true, as we assert, ought to agree with the years of the Council of Nicaea — in these words: *Was not the new Calendar sworn to the decree of the Council of Nicaea, and is it not said to have been reformed to accord with it? Should it not, therefore, have agreed with it most exactly? But if that [equation], at the time of that Council, from the old com-*

...must be reckoned by the old computation, are you not by that very fact approving the old Calendar and condemning this new one of yours? On the contrary, the starting point of these equations — and indeed of the whole correction — lies not in the year 1582 but in the Council of Nicaea itself. For nothing else can or should be meant by it, and nothing else is hinted at by your complaints against the old Calendar, than this: that if these equations had been employed long ago, the Church would have had throughout all this time — and would go on having in perpetuity — a Calendar of the utmost accuracy; but that, since they were neglected down to the year 1582, they are now recalled by this reformation as it were from exile, restored in full, and given back everything that had been lost to them in the intervening time. The author himself confirms this very point by his own example. For in his table of the equations of the perpetual cycle of epacts he likewise applies the equation of the lunations not merely to the years that follow, but also to past years, right back to the beginning of the years of Christ. So it will be quite proper to use a similar equation here as well.

Since that is so, why, I ask, do you forever have on your lips "the Council of Nicaea, the Council of Nicaea"? Why do you insist that the Calendar had to be reformed to the decree of that Council, and that it has now been reformed by your efforts — when you can point neither to the day of the vernal equinox nor to any Sunday, nor to any other fixed day of the week, for the time of that Council, but instead your own calculation puts 20 March in place of the 21st, and Monday in place of Sunday, and so on? If you have any shame left, will you not be ashamed of the labour you undertook in making this Calendar? Do you not blush — you who accepted it once made, and who by your advice urged others to accept it — that you were unable to look into its calculation any more closely than this; or, if you were able, that you did not examine it better before, moved by the Pope's authority, you proclaimed it a work finished with singular skill? Be ashamed, I say, either of your ignorance or of your rashness. And who in future will trust the numbers of this Calendar, when they themselves fail so ridiculously for times past?

[Margin: In what sense the Calendar is said to have been restored to the times of the Council of Nicaea.]

WE, on the contrary, maintain most firmly that our equation, true though it is, need not necessarily agree with the times of the Council of Nicaea; and that our opponent has not grasped what the new Calendar, restored to the decree of the Council of Nicaea, actually sets out to do. The Calendar was restored to the times of the Council of Nicaea for this purpose: that the Paschal termini might remain wholly unharmed and untouched. That was accomplished by removing 10 days,

so that the equinox was brought back from 11 March, where it fell before the correction, to the 21st, on which the Fathers of that Council laid down that it should fall — since the Paschal termini depend entirely on the day of the equinox. We have never supposed on that account, however, that our equation, had it begun from that Council, would have kept the equinox on the 21st day itself in such a way as never to depart from it by even a little. Just as now[?], after the correction, the same equation cannot keep the equinox on the 21st day itself so that it does not sometimes stray from it in one direction or the other — which happens because of the uneven and irregular advance of the equinox, as we showed in the previous book. Yet I do not deny that if this equation of ours for both years had been in use from the time of that Council, errors so many and so great would not have been committed — the equinox, that is, standing 10 days away from the day assigned to it, and the Moon nearly five days from its proper place: which is precisely how far apart we saw them in our own day, before the year was corrected, because that equation was not being applied.

That the equation of the solar year need not correspond to the number of days removed for the restoration of the equinox, we shall make plain by this example. Suppose the equinox had had to be restored to 25 March, as many wished. Would not 14 days have had to be removed to bring this about? Certainly. For in this way the equinox would have been shifted to 25 March from the 11th, where it was then falling. On that supposition, who does not see that if our equation of 400 years were applied to past years — and no more suitable equation can be established, since it agrees with the mean length of the year, as even Maestlin himself has admitted — it would not yield 14 days to be removed; indeed it ought not to yield so many, since from the Incarnation of the Lord down to our own age the equinox has anticipated its seat by 12 days at most? So a man would be wrong to apply the equation to years gone by in order to show it false on the ground that it does not present 14 days to be taken away — the number that would in fact have been taken from the year, had that restoration of the equinox been carried out.

Understand, then, that exactly this is what was done in our correction. Ten days were of necessity removed from the year 1582 so that the equinox might be brought back from the 11th to the 21st, immediately after which the 19 Paschal termini established by the Council of Nicaea would be reckoned — whether the equinox in the time of that Council really did fall on the 21st or on some other day, and whether our equation yields 10 days truly to be removed, or more, or fewer; provided only that in the years to come it keeps the equinox at the 21st in such a way as not to let it stray far from that day, and of its own accord and

unprompted brings it back to the 21st. We showed above that our equation performs this with sufficient exactness. Indeed, even if the equinox really did fall on the 21st in the time of the Council of Nicaea, our equation, correctly framed though it is, still cannot yield 10 days, but necessarily fewer, because of the inequality of the year and, still more, because of the very small length of the year in the interval lying between the time of that Council and the year of the correction, as we said above in its proper place.

Since this is so, it is perfectly clear that Maestlin is not dealing honestly when he drags our equation back into past years in order to find the Dominical letter for the time of the Council of Nicaea. For the equation need not offer as many days to be removed — and so need not show the solar cycle to be interrupted as many times — as were in fact removed all at once in the year of the correction. It is enough that the old solar cycle be used to bring out the Dominical letter for past years, since no interruption was made in it before the correction.

[Margin: Why the equation of the lunations, but not that of the solar cycle, is to be applied to the years before the correction.]

Nor is it any objection that we have applied the equation of the Moon to past years: the lunations really did anticipate their places in the Calendar, even though the solar year was never equated. Therefore, in order to know the state of the lunations in the years preceding the correction, the equation of the lunations must be applied. This is not the case with the solar cycle, since it cannot be interrupted or altered unless the solar year is equated by removing a number of days, or by omitting or adding an intercalary day. There you have the reason — the one he keeps hunting for — why we always have the Council of Nicaea on our lips: because we restored its equinox and kept the same Paschal termini. And that could not have been done had we not taken 10 days out of the year and laid it down that the equation was to be applied in every four-hundredth year.

If you have any shame left, Maestlin — to deal with you in your own words — will you not be ashamed of the labour you undertook in attacking this Calendar? Do you not blush at having tried so slyly to overturn the equation of the solar cycle? Be ashamed, I say, either of your ignorance or of your rashness. And who in future will trust your slanders, when in a matter perfectly plain in itself you have blundered so ridiculously as to attempt to carry the equation of the solar cycle back into past years, at a time when it needed no equation at all? But let this be enough about the new moons, the Paschal fourteenths, and the cycle of Dominical letters of the new Calendar, against this mathematician of Tübingen.

[Margin: Conclusion of the Apologia against Maestlin.]

DO you not plainly see, Maestlin, that you have taken up so great a war against the new Calendar to no purpose? For my reply has demonstrated that, so far as the use and practice of the Church is concerned, the Calendar is perfect in every respect. (As for the true motions of the heavens — which come into this business least of all — no Calendar whatever can be devised that answers to them at every point.) And so much so that, not in my judgement only but in that of other men of the greatest expertise as well, none more exact or more certain can be devised in which the reckoning of the Cycle is preserved as it is in ours — a thing we have shown at sufficient length to be absolutely necessary in civil affairs. For my part I do not doubt that you would be of one mind with us, were it not that your longstanding hatred of the Roman Church and of her head, the Supreme Pontiff — the lawful successor of the Apostle Peter, the first Roman Pontiff, and the Vicar of CHRIST the Lord on earth — so blinds you that you snatch most greedily, from any quarter you can, at every opportunity to trample, to slander, and, if you could, utterly to overthrow all his commands and decrees, even those which have no bearing whatever on the Faith, such as this ordinance of the new Calendar.

Since this is how matters stand, you cannot but be ashamed — if any room for shame is left in you — of having so boldly challenged all mathematicians, in the title of your *Examen*, to answer it, unless they wished to be taken for impostors and disturbers of the public peace in the Holy Roman Empire; or else, if they could not answer (of which you were entirely convinced), to admit frankly, for the common good of their country, that they had praised this Calendar with over-hasty applause and premature judgement, and had everywhere urged its acceptance. For I judge that your absurdities and slanders have been so fully met by this reply that no room now seems left for fresh quibbling, unless someone should wish to abolish altogether the use of any Calendar in which the nineteen-year cycle is employed, and in which years and months are counted by whole days, hours and their fractions being disregarded — a Calendar framed, that is, to the grasp of ordinary people and to the daily dealings of men. No one of sound mind, I think, could be persuaded of that. This, I believe, is quite clear to all who have read your *Examen* and weighed my *Apologia* with some care: that you bring no objection against us which we did not know before, and none that can shake the Gregorian Calendar; for you show nothing else than that the true equinox cannot always remain on the 21st day if our equation is applied. That we have never denied, since we know it to be in no way possible for any even and uniform equation to achieve this, given the inequality of the true motions.

LIBRI SECVNDI FINIS. [End of the Second Book.]

DEFENSIO ANTONII POSSEVINI E SOCIETATE IESV CONTRA MICHAELEM MÆSTLINVM

AVCTORE CHRISTOPHORO CLAVIO BAMBERGENSI

**A Defence of Antonio Possevino [Antonio Possevino] of the Society of Jesus,
against Michael Mästlin. By Christoph Clavius of Bamberg.**

[Margin: Another pamphlet of Maestlin's, in which he attempts to defend this second *Examen* of his against Possevino and the others who try to refute his arguments.]

I HAD scarcely committed this *Apologia* of mine to the press when another pamphlet of Maestlin's suddenly reached me from Germany, which he entitles a *Defence* of his second *Examen* — the work we have in hand and have examined not altogether carelessly. He seized the occasion for publishing this *Defence* from a certain writing (as he puts it) of Antonio Possevino of the Society of Jesus, who had taken him to task on precisely this ground, that he had attacked the new Calendar — and far more gently, at that, than the case demanded. Our opponent took this so ill that he thought it worth his while (so much did anger and the appetite for revenge prevail with him) to publish a pamphlet of his own, harrying that piece of Possevino's with truly incredible abuse and utterly destroying the good name and reputation of that good man. Our long silence also made him bolder in bringing this pamphlet out. For when in the whole two years just past he saw no one who dared to tear his *Examen* apart or shake it, he gained such boldness that he now challenges everyone anew, most insolently, to answer it, and is fully persuaded that there will be no one — whoever he may be, and however great a mathematician he may think himself — who can refute his demonstrations. All this can be plainly seen from the opening of his *Defence*, which I have decided to insert here word for word, so that everyone may see that in slander, and in puffing up his own fabrications to win belief, he is always true to himself. Here, then, is how he begins his *Defence*.

TWO YEARS have gone by since I published my second Astronomical Examination of the New Gregorian Calendar. In it, setting aside all the other questions and disputes capable of standing in the way of the Calendar's reception, I discussed that one argument of the papists which is, above all the rest, their chief and fundamental one — the argument of those who say: that the new Gregorian Calendar has been reformed and perfected with such completeness that in it all the errors of the old

Calendar, which laboured under manifold imperfection, have not merely been removed, but provision has been made for time to come with such foresight that its calculation will in no age whatever, right on IN PERPETUITY, be liable to any change. In that examination of mine, therefore, I demonstrated — from the very sources from which this whole question must be drawn and decided — that this new Gregorian Calendar in no way deserves such commendation. For in each and every one of those parts in which it either ought to have been reformed with the greatest accuracy, or is supposed to have been so reformed, I found it faulty in countless ways: so much so that nothing at all blameworthy can be found in any Calendar whatever in which this Gregorian one is not defective too. For that reason it ought rather to have been called A CESSPOOL OF ALL ERRORS than a reformation, since into it, as into a bilge, the errors of all Calendars flow together in troops. Relying then upon the certainty of astronomical reasoning, and hedged about by it, I did not fear to challenge boldly all mathematicians — whether those who first composed this Calendar or those who have defended it hitherto — to answer, and so on.

[Margin: Maestlin will not allow that the new Calendar can be called perpetual; instead it is a cesspool of all the errors that can be found in any Calendar.]

THE moment my Examen appeared in public it came as the greatest of surprises to the papists, and especially to those to whom the New Calendar was agreeable; for they had convinced themselves for certain that this new creature of theirs could not be charged with a single blemish, much less convicted of one. And so those very men began, with premature censure, to abuse me strangely among themselves, as though I alone wished to seem wise all by myself, in preference to certain most learned and most celebrated mathematicians, the authors and approvers of your new Calendar. Hence they promised themselves outright, and threatened me, that those demonstrations of mine would be taken up as they deserved and solidly refuted out of the very foundations to which I had (in their judgement) ignorantly appealed. But what happens? Such is the strength of unconquered truth that not only does it not give way before these men's outcries — like the yapping of feeble little dogs — but it even challenges of its own accord anyone who will meet it with equal strength, and waits eagerly for him to come forward. And so I await a refutation of the said Examen of mine, not at all fearfully, but with a stout heart. Yet in this whole two years I see nothing of the kind, apart from a single writing by one Antonio Possevino, a Jesuit — and that, as I shall shortly show, utterly inept. A year has indeed gone by since I learned, from the report of certain people, that there were some, somewhere, who had not merely planned a refutation but had by then already handed it over to the press to be printed. Yet neither has that come to me in all this time, careful search though I have made. So while these men shirk coming

out into the light by weaving delay upon delay[?], they tacitly bear witness that, convicted in their own conscience, they cannot resist the truth. For if they were not fostering a bad cause, why is it that out of so many of their own most expert, most wise and most learned mathematicians of the whole Christian world (as Busaeus, the Jesuit of Mainz [Johannes Busaeus], boastfully reports in thesis 170 of his Disputatio) — or (if only Pope Gregory xij. [Gregory XIII] speaks the truth in the Bull) out of these...

...the most expert men in these matters, whom the Pope himself had long before chosen out of the leading nations of the Christian world, and who devoted much time and care to that labour of correcting the Calendar — not one of them comes forward to explain the reasoning of the new Calendar and argue its case in earnest. Both the rest of them and those very men whom I called out in that writing of mine, whether obliquely or by name, keep silent. Indeed, I have it from trustworthy men that even that Mathematician whom I touched on page 2 of my Examen has been beaten by the truth and has come over to my opinion. I hear that some others are doing the same: bound though they are to the papal religion, they nevertheless admit openly that the demonstrations of that writing of mine cannot be refuted by anyone at all, however great a Mathematician he may think himself. Let me add this too. I have likewise been informed by trustworthy men that a certain person has scraped together some things or other[?] more against my person than against my writing, but that they have been suppressed by the authority of his Superiors as worthless and utterly unfit for publication.

THEREFORE the demonstrations of that Examen of mine still stand unmoved, and do not lose their force under the abuse of these men. The new Calendar, by contrast, remains in every one of its parts wholly imperfect, faulty, defective. That being so, out of what love of novelty — or rather, bewitched or driven by what sting of madness — do the papists, mathematicians and others alike, keep commending that utterly defective Calendar of theirs to the whole world so grandly, under the wholly false title of a most exact and most perfect Reformation, and pressing it and forcing it upon them? Is this not a deliberate mockery of the whole Christian world, a tyrannical subjugation of it like a herd of slaves, and its utter ruin?

DOES this braggart soldier not seem, delighted at a victory already won, to be singing his own triumph? I am astonished, and astonished in the extreme, that he can be so puffed up that — I will not say he despises every Mathematician in the whole world by comparison with himself — he actually believes no one is to be found who could meet him on equal terms. One of two things must be true: either he is so swollen with the spirit of pride that he refuses to look at truth itself, or

else — and this is what his Examen shows — he is entirely ignorant of, and a stranger to, the ecclesiastical ceremonies by which Easter has been celebrated throughout the whole Christian world down to the present time. Blinded by his craving to contradict, he does not see how absurd the objections are that he brings against the new Calendar. But perhaps I shall bring it about that he opens his eyes at last to recognize his own errors — or at any rate that those who can see nothing in this business for themselves will not follow a blind guide.

[Margin: The new Calendar is rightly called Perpetual, and it is not a cesspool of all the errors that can be found in any Calendar, as Maestlin would have it.]

For in this Apologia of mine I have shown plainly why the new Gregorian Calendar is called Perpetual and liable to no change whatever, and that it deserves that name, however much he may rage in the meantime. If he wants to understand this — and that he has entirely failed to understand it is proclaimed both by his Examen and by this pamphlet of his — let him read Caput 5. lib. 1. and caput 4. lib. 2. of this Apologia. As for his reproach that the new Calendar is a cesspool of all the errors that can befall any Calendar, who does not see that he said this out of hatred for all Catholics, and above all for the Roman Pontiff, the Vicar of Christ? Had he charged the new Calendar with one error or two, someone might perhaps have suspected that not quite all errors had been removed from it. But now that he proclaims everything in it faulty, who will believe he spoke with a sincere and candid mind? So let us compare the new Calendar with the old, so that no one can fail to see that Maestlin attacks the Gregorian Calendar, and calls it the cesspool of all errors — as though the errors of all Calendars flowed together into it in troops, as into a bilge (his own word) — not out of love of truth, but bewitched or driven by that sting of madness which he charges against us. What if we show that all its errors have been removed, so far as the Cycle allowed?

[Margin: The errors of the old Calendar, which have been removed in the new one so far as the cycle allows.]

In the old Calendar the equinox was continually abandoning the place appointed for it and moving forward toward the beginning of the month, so that in the years immediately before the correction it had drawn a full ten days away from its own seat. Nor did it halt its advance there: its increments grew larger every day, and there was no hope at all that it would ever return of its own accord to its proper place. In the new Calendar, by contrast, the equinox falls on 21 March, the seat assigned to it by the ancients. And if it happens that the equinox sometimes withdraws from that day, on account of the instability of the true motions, that

withdrawal cannot grow to 10 days, as it did in the old Calendar, but at most to two or three; and of its own accord, with no other remedy applied, it returns to the 21st day, even after 20000 years, as we showed in Book 1. Next, in the old Calendar the golden number presented the Paschal Lunæ XIII much later than the facts warranted, so that the opposition according to the Cycle — that is, Luna XV — usually followed the mean opposition by four days, whereas Luna XIII never fell upon the mean opposition itself, still less ran one day ahead of it, which is what a correct arrangement of the Cycle in a Calendar requires. The new Calendar has corrected this intolerable error so that the Paschal Luna XIII almost always runs one day ahead of the mean opposition, or coincides with it, or at worst falls not long after it. What greater accuracy could be looked for in any Cycle? From the two errors of the old Calendar that I have recounted, and that we have removed in the new Calendar, two further errors followed, and very grave ones. First: in those years in which Luna XIII according to the golden number fell on 11 March, or on the 20th, or on any day lying between the two — which happened whenever one of the golden numbers 3. 6. 8. 11. 14. 19. was running, that is, six times in every nineteen-year span — Easter was always thrown out of the first month into the second.

[Margin: When Easter was celebrated in the old Calendar either in the second month, or after Luna xxi, contrary to the decrees of the Fathers.]

Second: whenever the Luna XIII of the golden number fell on a Sunday, or on a Monday, Tuesday or Wednesday, Easter was celebrated in the fourth week — that is, on Luna xxij, or xxij, or xxij, or xxv — because the Luna XIII of the old Calendar was in the sky nearly Luna xvij; and so, whenever Easter was four days or more away from that Luna XIII, it necessarily fell on Luna xxij or later. Since all these errors have been removed from the new Calendar, so far as the Cycle allowed — as I have demonstrated in this Apologia — what impudence and recklessness is this in Maestlin, that, sunk himself in the cesspool and bilge of every error, he is not afraid to call the new Calendar the Cesspool of all errors? He himself has certainly not been able to convict it of a single error — however grandly he boasts of having done so — unless we choose to call it an error that the calculation of the new Calendar does not agree in every respect with the true motion of the Sun and of the equinox. Apart from this he proves absolutely nothing else in his whole Examen.

[Margin: What does Maestlin prove in his Examen?]

But that this agreement is not necessary — indeed, that it is not even possible for any Calendar in which popular rules have to be set out and a Cycle laid down to

answer to the true motions — can be seen abundantly, and more than abundantly, from what we have demonstrated in the two preceding books. It would therefore be truer to call his Examen, and this Defensio published against Possevino, not merely a cesspool of errors but a workshop of every lie with which the new Gregorian Calendar can be assailed and attacked.

[Margin: Maestlin's writings against the Calendar are a cesspool of all errors and a workshop of every lie.]

MY OPPONENT then goes on with his victory and his triumph, and tells us that his Examen came as a complete surprise to us: for we do indeed threaten him with a reply, yet none of us has published one so far.

He promises himself victory as confidently as though he had overturned the new Calendar by some solid argument — when in fact all the weapons he brings forward in his Examen establish only this (as I said a little earlier): that the equinox, once the equation of the new Calendar is applied, does not correspond exactly to the true equinox. And that no one has ever denied. Nor can any even and uniform equation be devised that agrees precisely with the true motions, as we demonstrated at length in Book 1. If he happens to maintain that such an equation can be found, let Maestlin construct it himself, with that laborious cleverness of his, so that we may see he had good reason to censure the new Calendar. But if he admits that it cannot be done at all, then let him admit as well that on this ground he has attacked the new Calendar rashly and ranked it below the old.

[Margin: Maestlin proves only that the new Calendar does not agree exactly with the true motions — which is beside the point, and is denied by no one.]

For consider: was the old Calendar, which you praise so highly, Maestlin, and prefer to this new one on every count, so shaped to the true motion that it never diverged from it? Certainly, if the deadly hatred you bear the Roman Church allowed you to admit the truth, you would never deny that the new Calendar comes closer to the true motion than the old. For in the old Calendar the equinox had so far abandoned 21 March, the day appointed for it, that it could not possibly return there unless 10 days were subtracted from the year. In the new one, although the equinox strays from that day for a while, it nevertheless returns to it of its own accord after some centuries have passed, with no other remedy applied. I say nothing of the lunations around the time of the correction, which in the old Calendar differed from the true new moons by a full four days and more — something that cannot be said of the lunations of the new Calendar.

[Margin: The old Calendar diverges from the true motions more than the new one does.]

As for your claim that many, Catholics among them, have come over to your opinion, on the ground that by their silence they testify that, convicted in their own conscience, they cannot resist the truth — that troubles me little. You may see for yourself how true it is. For my part, I set out at the beginning of this *Apologia* the reason why no one has yet answered your *Examen*; and you can now see well enough that the reason was a true one and not invented, since you see that windy *Examen* of yours foiled by this *Apologia* of ours, such as it is. And indeed I do not doubt that our reply has come as a complete surprise to you — just as you say your own *Examen* did to us — the reply that you call, falsely and wittily (as you do everything), an elephantine birth. What can you do about it? So great an animal as the elephant cannot give birth quickly. The elephant is slow to give birth, I grant, but what it bears is an elephant; whereas you, when you give birth, bear a gnat. For what is there in your writings, Mathematician of Tübingen, beyond the sting of slander and the trumpet of self-advertisement? Yet I am not afraid that this elephantine birth of ours will look to you late rather than early: if you are waiting for it as eagerly as you say, you now have what you were waiting for. See to it, then, that you do not change your mind and decide there was after all no reason to wait for it so keenly. But let us pass on to other matters, and weigh the chief remaining heads of Maestlin's *Defensio*.

[Margin: Maestlin gives birth to a gnat.]

[Margin: Three things above all in Possevino's writing stung Maestlin.]

THREE things above all in that writing of Possevino's stung Maestlin extraordinarily. First, that Possevino called him a heretic. Second, that he asserted the boastful title of Maestlin's *Examen* shows well enough what a windy mind the man has, and that consequently there is far less in the body of his writing than its front promises, and that most of it is rotten stuff. Third, that he maintained the new Calendar is built up by Maestlin rather than pulled down, confirmed rather than weakened: for in the *Examen* Maestlin demonstrated that the equinox withdraws from 21 March in both directions, and thus that the 21st itself, the day the Gregorian Calendar assigned to the equinox, is in a sense the midpoint between the 19th and the 24th, the limits within which the equinox can wander. That all three of these things are said by Possevino with perfect truth we shall show with the utmost clarity and with no trouble at all.

[Margin: That Maestlin is a heretic.]

FIRST, then, that Maestlin is a heretic no one who knows him will deny — unless he happens to be a heretic himself. I pass over what most people in Germany know, that he was driven out of Heidelberg for being a Ubiquitarian [Vbiquetarius]. The profession of faith that Maestlin employs in this Defensio of his, in order to escape the name of heretic, is in fact such that, even if we had no other evidence at all, we could cut his throat with his own confession. For he rejects the traditions of the Fathers, he despises the patronage of the Saints, and he assigns justification and blessedness to faith alone; and finally he professes himself a Ubiquitarian — if not in word, then in substance. With what face, then, does he refuse the name of heretic, when he takes up so eagerly heresies so many and so open?

[Margin: What Maestlin undertook to prove in his Examen against the new Calendar.]

[Margin: Maestlin brings nothing new against the Calendar in his Defensio.]

SECOND, the attentive reader will easily recognize from what follows how truly Possevino asserted that the boastful title of Maestlin's Examen shows well enough what a windy mind the man has, that there is consequently far less in the body of his writing than its front promises, and that most of it is rotten. Maestlin had undertaken to demonstrate in his Examen — and in this very Defensio he emptily boasts of having demonstrated — that everything in the new Gregorian Calendar is so faulty and corrupt that it ought more truly to be called the Cesspool of all the errors that can befall any Calendar than a restoration. Then, coming down to particulars, he says: that the equinox has not been correctly restored to 21 March by the removal of 10 days; that it cannot be kept at the 21st if the equation prescribed in the new Calendar is applied; that the Epacts do not properly perform their office of indicating the new moons and the Paschal termini, both because they are arranged faultily in the Calendar and because their equation has been wrongly set up; and finally that the ancient Solar Cycle, or Cycle of Dominical letters, has not been perfectly equated so as to indicate the Dominical letters as they stood at the time of the Council of Nicaea. But how much of all this he actually proved in that wordy Examen can be gathered clearly from what we have written against him in this Apologia. For in it we have amply refuted every one of his quibbles, which he boastfully repeats in this Defensio; so that nothing seems worth adding here, especially since he has himself brought forward nothing new against the Gregorian Calendar in this Defensio of his. I will add only this, which we showed above as well: if his whole Examen is examined more carefully, we shall find that nothing is proved in it except that the retention of the

equinox on 21 March by the equation of the new Calendar does not agree with the true equinox.

[Margin: There is far less in the body of Maestlin's Examen than its front promises, since he proves only that the equinox of the new Calendar does not agree with the true equinox — and yet he had undertaken to prove far more.]

But both the author of the Calendar and we ourselves, who were summoned to the restoration of the year, foresaw this before the Calendar was published by GREGORY XIII, Supreme Pontiff — as can be established with perfect clarity from the Compendium that was sent to the Christian Princes a full five years before the correction of the Calendar. For why else would these words have been added near the end of it, as we also said in Cap. 4. of this book?

[Margin: The authors of the Calendar foresaw that the equation of the solar year would not answer to the true motion in every respect; so Maestlin attacks it in vain.]

Once the vernal equinox has been restored to the place from which it had fallen away, and this Cycle of Epacts — which can be adapted to any length of year — has been set beside the Calendar, and the scheme of intercalation we have described has been adopted along with the equation of that Cycle, the years and months will hereafter agree with the reckoning of the Sun and Moon so well that no variation or discrepancy will be able to arise thereafter; and if any ever should arise, this same method shows that it can be beautifully restored to its proper state.

Why, I ask, would this have been added if we had thought — as Maestlin slanderously charges us with thinking — that our equation could never diverge from the true motion of the equinox? And why, if we had likewise supposed that the Alphonsine year, which is midway between the greatest and the least, would answer to the true equinox in perpetuity, so that it would never need any equation other than the one we prescribed — why then, I ask you, would these further words have been added by us at the end of the same Compendium?

But if to anyone the Alphonsine calculations should seem too uncertain to be trusted, and he judges it better to hold to more recent ones, he will certainly see that the arrangement and ordering of this ingenious Cycle, and of the table of Epacts devised by Lilius [Aloysius Lilius], is such that it can be fitted without any trouble to the calculations of Copernicus, or of anyone else at all, provided that a small equation-table drawn up from them is substituted for the one we have written in the margin — as, for example, the table we have set down here, which does not depart much from Copernicus's reckoning.

Do we seem to you, Maestlin, to have meant by these words that the new Calendar is called Perpetual because the equinox clings to 21 March so firmly that our equation cannot shift it from that day? You are quite mistaken if you think so. How could we have thought that, when we left it open for the equation to be set up either to the Alphonsine year, or to Copernicus's year, or to anyone else's? We called the Calendar Perpetual for this reason: that, with no change made to its Cycle, the equation can be set up for any length of year whatever, and easily corrected if it is found to stray too far from the true motion — as we explained more fully in Capite 4. libri 2.

[Margin: Why the new Calendar was called perpetual by its authors.]

Since this is so, are you not ashamed to throw at us the very thing we freely concede and admit? Why do you keep charging us so shamelessly with promising, in our New Calendar, the restoration of the vernal equinox to 21 March with such careful provision that it can never in all perpetuity withdraw from that day as from its own fixed seat — when you cannot show that we said this anywhere, except in the sense we have set out concerning the Calendar's perpetuity? You are beating a stone, Maestlin, as the proverb has it: first because you waste your effort, since you accomplish nothing against us, and second because you injure yourself rather than us, since everyone can see from this that you are looking for a knot in a bulrush, as the saying goes, and maliciously attacking the new Calendar by slander. Is this not a case of there being far less in the body of your Examen than its front promises? And is it not rotten, next, that you find fault in the new Calendar with the very thing the Church has always devoutly observed in the celebration of Easter, on the authority of the Decrees of the Fathers and of the Councils? I mean when you say that Easter is not to be celebrated at the full moon next after the equinox — although this custom has always prevailed in the Church, and Easter cannot be celebrated more fittingly at any other time, as I proved above both from the most ancient practice of the Church and from the weightiest writers who have written on the correct celebration of Easter. In this matter you betray your ignorance all too plainly.

[Margin: Many things in Maestlin's Examen are rotten.]

Is it not rotten that you should quibble that we restored the Calendar toward the end of the year 1582 rather than near its beginning, so that the Easter which — as you prattle — had been lawfully celebrated in the old Calendar should not be improperly celebrated in the new? You certainly show how well versed you are in this business, since you are, as the saying goes, wrong by the whole sky. For that year's Easter would have been lawful, by the prescription of the Council of

Nicaea, if 10 days had been removed at the beginning of the year; whereas in the old Calendar it was celebrated improperly, in the fourth week, contrary to the Decrees of the Fathers and of that same Council, as we demonstrated in Cap. 3. lib. 1. Yet you are so pleased with this rotten doctrine of yours that you are not ashamed to boast, in that Defensio of yours, that the truth — recognized both about the other errors of the new Calendar and especially about this one, allegedly committed in the new Calendar at the Easter of 1582 — is a stake in our eyes. But take care that this very reply of mine, not to say the whole Apologia, in which I have plainly convicted you of ignorance in these matters, does not turn out to be a beam in your own eyes.

[Margin: This reply is a beam in Maestlin's eyes.]

Is it not utterly rotten that you should think Luna XIII does not differ from the full moon, when this runs counter to the teaching of all the Fathers and of the Councils? Is it not rotten to teach, against the whole school of Mathematicians, that the true æquiuoetium [recte: æquinoctium] can be a full four days distant from the mean, and thus that the mean claims 23 March for itself while the true one will slip to the 27th after some centuries have passed — when a calculation of this matter extended over 20000 years flatly contradicts it? And finally, is it not rotten to attack the equation of the Epacts so boldly when you have entirely failed to grasp its foundation and root, as is clear from what we wrote in cap. 7. lib. 2.? I pass over in silence the fact that you attack neither the equation of the Epacts nor that of the Solar Cycle from their own proper principles, as the philosophers put it — for you understand perfectly well that neither of them could have been set up more suitably. The one thing you do establish is that the equation of the equinox does not agree exactly with the true equinox of past years; and that tells nothing against us, as we showed above in cap. 7. lib. 1. Certainly, to overturn both equations you would have to show that neither of them answers to years to come; and this you have not done, nor ever will. In the Solar Cycle you did not even attempt it; and how successfully the matter turned out for you in the Epacts will be judged by those who read Cap. 7. lib. 2. of my Apologia attentively.

[Margin: When Maestlin proves that the equinox recedes from 21 March now to the 19th, now to the 24th, he confirms the equation of the equinox in the new Calendar.]

LASTLY, that Possevino affirms truly and rightly that Maestlin — unwilling and unwitting though he is — has done more to confirm the Gregorian correction than to weaken it appears plainly from what we wrote in lib. 1. cap. 5. 6. & 7. For Maestlin shows that the equinox of the new Calendar wanders from the 21st

appointed for it, now to the 19th, now to the 24th — his claim that it can fall away as far as the 27th being, as we established in that same place, a slander and altogether false — so that the 21st holds a kind of middle position between the extreme days of the withdrawal. Who, then, will doubt that the equation of the equinox has been most aptly devised, since it keeps the equinox at the midpoint of the withdrawal in either direction, so that even after 20000 years it still returns to the 21st day of its own accord? Anyone who wants more on this should read those same cap. 5. 6. & 7. lib. 1. of this Apologia.

I HAVE NO intention of working through the remaining chapters of this Maestlinian Defensio, since in them he merely repeats the arguments he had already put forward in the Examen — with countless insults and mockeries added, boasting more than once, as he heaps abuse on us, that none of us will dare to answer him, indeed that none of us can. Such is the presumption of that swollen Tübingen Mathematician. Those arguments I believe I have answered fully and abundantly in the two preceding books. From his abuse and insults, moreover, with which all his pages — I might say all his sentences — are crammed, it will be easy to infer in what spirit Maestlin has attacked the new Gregorian Calendar with such angry and uncontrolled feeling: whether out of zeal and love of the truth, or rather out of hatred for the Roman Pontiff and for the whole Catholic and Orthodox Church.

[Margin: Why no reply is made to the remaining chapters of Maestlin's Defensio.]

For my part I hold the view that he would have harried the Calendar with the same fury even if the true motions had been fully considered and observed in it, or however else it had been restored — for this reason alone, that it was issued by the Roman Pontiff and proposed by him to the whole Christian world for acceptance. Then indeed he would have cried out — and not without cause — that we are impostors and disturbers of the public Peace in the Holy Roman Empire, on the ground that we were violently thrusting out the civil years, which ought to be equal and adapted to the common people's grasp, and which the whole Church, Eastern as well as Western, has always used from almost the very beginning down to our own age, and

[Margin: That Maestlin insidiously urges us to construct perfected tables, so that our Calendar may be able to be Perpetual.]

— and force unequal years upon them in their place, years that must inevitably throw trade and human contracts into extraordinary confusion. That he would certainly have done this cannot be doubted. For if he calls us impostors now,

when we have kept in the Calendar the equal year which, because of its immemorial use, is the best known of all to everyone, what, I ask, would he have done had we brought into the Church a new year — and an unstable and highly unequal one at that?

Let him stop, then, giving us treacherous advice and harping on the claim that we ought first to have built, from new observations, new tables — utterly perfect ones — before correcting the Calendar, so that (as he himself puts it) we might have boasted more confidently of the perpetuity of our Calendar. In fact this would have given him a greater opening to insult us: as men who had abandoned the observations of the most excellent astronomers and applied their own instead, confirmed as yet by no experience, to a matter as grave as the restoration of the Calendar. Add to this that the Calendar would then have been perpetual on no reckoning at all.

[Margin: That the Calendar could not be Perpetual if it rested on certain particular astronomical tables.]

For a Calendar cannot be perpetual if it is bound and tied to any astronomical tables so tightly that it never departs from them in any respect. No tables composed down to this day, even by the most expert astronomers — nor any that can be composed — permit us to promise much for their durability, because the periods of the celestial motions have not yet been fully grasped, as we showed in Cap. 4. lib. 1. A Calendar will be perpetual only when the cycle set out in it fills all the days of the whole year, so that, with the due equation applied at its proper times, it can be adapted to every length of the year without any change whatever being made in it. That this is exactly what the new Gregorian Calendar is has been shown plainly in the two preceding books.

SO THERE you have it, Maestlin: someone has at last answered your absurdities — and why should I not call them absurdities, since all your arguments proceed from sheer ignorance of what the Fathers and the Councils decreed about the right celebration of Easter, and so are pure trifles? You had thoroughly persuaded yourself that no one would do it, and for that reason you kept jeering at this reply in your *Defensio*, calling it an elephant's birth. And I have answered — one man out of all those who took part in that splendid work of correction — not because I feel that I have more talent than the others, but because so it seemed good to those whom I think it wrong to disobey. What is more, the goodness of the cause and the love of truth roused me to enter this contest, such as it is, the more willingly: so that anyone at all, provided he is not wholly ignorant of astronomy and has even a middling command of the ecclesiastical computus, may be able to

defend and protect the new Calendar against your currish barking with no trouble whatever.

[Margin: Why this Apologia does not refrain entirely from harsher words.]

And in this reply I would gladly have refrained from those words that sting and prick you now and then, had not your own garrulous and utterly shameless abuse forced me to it — abuse in which you leave out no insult, no contemptuous word that you do not spew out against the Supreme Pontiff or against us who restored the Calendar at his command — forced me, a man otherwise wholly alien to this kind of speech both by nature and by the rule of my order.

[Margin: If Maestlin had attacked the Calendar modestly, a modest reply would have been made to him.]

Certainly, had you set out modestly whatever difficulty you had, like a man who wants nothing more than to be instructed in matters he does not know, we too would have answered most modestly. But now that you have overstepped the bars and bounds of modesty and decency, and, like some braggart soldier, have paraded a triumph over us through six hundred insults and reproaches, as though the victory were already won, we could not do otherwise than take that boldness and arrogance of yours as it deserves. We do not compete with you in abuse — everyone is easily outdone by you there — but we merely blunt your intolerable audacity with the weight of our words, and even so we remain always mindful of Christian modesty.

[Margin: That in attacking the Calendar Maestlin sets himself against the whole Christian world.]

AND WHO, after all, are you, sunk in a corner of the earth and in the obscurity of Tübingen, to set yourself so insolently against the whole Christian world and to try to overturn what the Roman Emperor, all the Kings and Christian Princes who are true sons of the Catholic Church, all the Republics and the most famous Universities urged the Roman Pontiff with one consent to complete as soon as possible? Be ashamed — if any shame is left in you — of that notable impudence of yours, by which you have betrayed your ignorance, not to say your folly, to the whole world. Would it not have been better to accept and embrace the new Calendar in silence together with the whole Christian world, rather than to appear to despise all mortals in comparison with yourself, as though you alone were wise? — especially since the new Calendar is in no respect opposed to your false Religion, in which you obstinately persist and for whose sake you have taken up so great a war against the new Calendar.

But you will say that this Calendar is stuffed with countless errors and utterly contradicts astronomical truth, and that this was not to be borne. Which errors, then? These, I suppose, the ones we have mentioned more than once.

[Margin: Four errors of the new Calendar which can in no way be avoided, however the Calendar is set up.]

First, the equinox is not kept, by the equation prescribed in the Calendar, on 21 March, to which it was brought back; instead it wanders freely away from that day in both directions as far as the 19th and the 24th, although it returns to the 21st in the meantime. Second, the new moons are shown by the epacts later than they should be, and so it can happen — though rarely — that Easter is thrown into the fourth week of the lunar month. Third, Easter is sometimes transferred from the first month into the second, or into the twelfth, although this too happens rarely: namely when the Paschal Moon XIII falls before 21 March but comes after the day on which the equinox occurred, or falls on that same day, should the true equinox happen before the 21st; or again when the equinox follows 21 March while the Paschal Moon XIII comes before that same equinox, provided it is not found before the 12th. Fourth, Easter day will sometimes be kept — though very seldom indeed — on Moon XIII itself, before the full moon, that is, before Moon XV.

[Margin: That apart from those 4 errors, which cannot be avoided, Maestlin has convicted the Calendar of no error.]

To these four errors may be reduced all the objections that are truly brought against the new Calendar by you, or that can be brought by anyone else; nor will you ever convict it of any other fault, even if you bring every engine to bear. But these four errors — if they are to be called errors, when they must sometimes be admitted not carelessly but of necessity — cannot be avoided in any Calendar that is established by cycles and rules which are easy to grasp and uniform, as is only right. As to the first: if the equinox must be fixed to some definite day so that the Paschal terms may be settled and determined in advance — which is absolutely necessary in the civil and political year — who is there who does not see that the true equinox, because of its unequal and irregular motion, can now come before the day appointed for the equinox and now after it? Indeed, even if the motion of the equinox were always equal and uniform, this inconvenience still could not be avoided by any means, on account of common and bissextile years, as we demonstrated above. And this error is necessarily accompanied by the third, as is plain. The second error, then, must be admitted altogether

in every Calendar in which the lunar cycle is rightly arranged, lest it should sometimes happen that the new moons of the cycle run ahead of the conjunctions of the luminaries actually made in the heavens, and thereby the fourth error be incurred more often. Even so we cannot escape, in our own Calendar, the fact that our Easter sometimes falls on Moon XIII — though far more rarely than in the old Calendar around the time of the Council of Nicaea. Would you not, then, have acted far more prudently had you passed over these necessary errors — and others too, if any had crept in — along with the whole Christian world? For you tolerated, together with the Church, errors in the old Calendar that were far greater and more conspicuous, and yet no disturbance followed from that in the Empire or in any commonwealth. But you, like a bawling pettifogger, stir up tragedies over trifles, so as to seem to be doing and saying something.

SINCE THIS is so, who — apart from you alone, Maestlin — will be of such reckless audacity as to dare carp at the new Calendar because things have not been avoided in it which cannot be avoided in any way? And I do not doubt that, with your inborn arrogance, you will attack the new Calendar once again after this answer of mine, so as not to seem beaten and to have lost your case — although you claim, falsely and hypocritically, that the authority of truth counts for so much with you that you would yield to it most gladly if anyone were to teach you otherwise from the sources of this business. But contrive everything you like, try however you will to pour darkness over the truth on every side: you will accomplish nothing, you will achieve nothing. The light of truth will of itself shake off all darkness in the end — and yet why do I say this? All that earlier fog which you had cast over men's minds has been so thoroughly dispelled that there is no room left now for new fog: day has broken, all lies open, everything is plainly seen. You will be able to do no harm at all, even if, like the Caecias wind, you draw the clouds after you.

[Margin: What Maestlin must prove if he is to overturn the new Calendar.]

But if you really do want to attack and overturn the Gregorian Calendar again, you will have to show either that other errors besides the four just enumerated are to be found in it, since those four cannot be got round; or that the Church runs into them more often in the new Calendar than in the old; or else, if you can achieve neither of these — as I am fully convinced you cannot — you will have to produce a Calendar of your own that is entirely free of every flaw, provided that the civil year is used in it (that is the main point) and that the cycles customary in the Church are employed: which we expect you to do at the Greek Kalends. Be of stout heart, then, and set your hand to so splendid an exploit.

HIC RHODVS, HIC SALTVS. [Here is Rhodes; here make your jump.]

FINIS.

APPENDIX TO THE *DEFENCE OF THE NEW ROMAN CALENDAR*

Divisional title page of the volume's third part. Transcribed verbatim first, then translated. The typographic distinctions of the original are preserved: italic for the word APPENDIX and for Continens and the privilege line; small capitals for the opening word of each item in the list and for the proper names; the line-end hyphens fall where the compositor set them.

Verbatim transcription:

A P P E N D I X AD NOVI CA- LENDARII ROMA- NI APOLOGIAM
Continens

Iosephi Scaligeri Elenchum & castigationem Calendarij Gregoriani à
Christophoro Clavio castigatam,

Responsionem ad conuicia & calumnias eiusdem Iosephi Scaligeri in
Calendarium Gregorianum, eodem auctore: Cui accessit Refvtatio
Cyclometriæ eiusdem Scaligeri,

Confvtationem Calendarij Georgij Germani, eodem auctore,

Admonitionem Theodofij Rubei pro Christophoro Clavio aduersus
Francisci Vietæ expostulationem,

Responsionem Laurentij Castellani ad expostulationem Francisci Vietæ
aduersus Christophorum Claviu.

[Printer's device: see the figure note below.]

MOGVNTIÆ, Sumptibus Antonii Hierat apud viduam Reinhardi Eltz.
Cum gratia & priuilegio sacræ Cæsar. Maiest. ————— Anno
M. DC. XII.

Translation:

APPENDIX

TO THE DEFENCE OF THE NEW ROMAN CALENDAR

Containing

Joseph Scaliger's [Joseph Justus Scaliger] *Refutation and Correction of the Gregorian Calendar*, itself corrected by Christoph Clavius;

A *Reply* to the abuse and slanders of the same Joseph Scaliger against the Gregorian Calendar, by the same author — to which is added a *Refutation of Scaliger's Cyclometry*;

A *Confutation* of the Calendar of Georg Germann [Georgius Germanus], by the same author;

The *Admonition* of Theodosius Rubeus on behalf of Christoph Clavius, against François Viète's [François Viète] complaint;

The *Reply* of Laurentius Castellanus to François Viète's complaint against Christoph Clavius.

MAINZ [Moguntiaë], at the expense of Antonius Hierat [Anton Hierat], at the press of the widow of Reinhard Eltz. By the grace and privilege of His Sacred Imperial Majesty. ————— In the year 1612 [M. DC. XII.]

Diagram. The Jesuit printer's device, set between the list of contents and the imprint. A rectangular woodcut: at the centre, an upright oval cartouche enclosing the IHS monogram, surmounted by a budded (trefoil-ended) cross rising from the crossbar of the H, with three nails arranged in a fan below it; the monogram sits within a flaming/rayed glory. Around the oval runs a beaded frame bearing a lettered legend, read clockwise from the upper left. The cartouche is enclosed in strapwork scrollwork, with a winged cherub's head at the top centre, two winged angel figures playing wind instruments in the upper corners, and two winged putti in the lower corners; foliage and fruit fill the border, and a small basin-like ornament finishes the foot.

- Legend, lower left arc (reading upward): LAVDA
- Legend, upper left arc: BILE
- Legend, upper right arc: NOMEN
- Legend, lower right arc (reading downward): DOMINI
- Central monogram: IHS

The four segments are the single motto **LAVDABILE NOMEN DOMINI** ("Praiseworthy is the name of the Lord", Ps. 112:3), broken across the four turns of the beaded band. Every letter is inked and legible; nothing is occluded, and the word LAVDA is not divided from BILE by anything but the band's turn.

IOSEPHI SCALIGERI ELENCHVS

Joseph Scaliger's Refutation

and Correction of the Gregorian Calendar

CORRECTED

by CHRISTOPH CLAVIUS of Bamberg, of the Society of Jesus

PROOEMIUM OF CLAVIUS

Louis Chasteigner of La Roche-Posay [Loysius Castagnerus Rupipozæus], Baron of Abain — a man both of the noblest birth and of the deepest learning — was serving as ambassador of the King of France to Gregory XIII, Supreme Pontiff, and out of the long-standing friendship between us he recently sent me a little book of Joseph Scaliger's on the Paschal canon of Bishop Hippolytus, together with some extracts (as he calls them) from the Greek computus of Isaac Argyrus on the correction of Easter. To these Scaliger had added his *Refutation and Correction of the Gregorian year* [*anni Gregoriani Elenchum & castigationem*].

Captivated by the name and reputation of so great a man, I seized on the book eagerly, in high hope that it would offer something worthy of himself and worthy of his father. My hope was not altogether disappointed. I found much in it ingeniously worked out, sharply said, and fully explained — enough for you to recognize the son of Julius Caesar Scaliger. And yet, as I read (I say this with all respect for him), I came upon a number of things that seemed to have been written with less care than a man of his stature warranted. And so, passing over everything else, I had noted in the margin only those points on which he criticizes the Gregorian calendar mistakenly; and in the end, urged on by men of the greatest weight, I was brought to publish those notes, so that Scaliger's authority should not stand in the way of readers who see less clearly in this business — and at the same time so that he himself might in future wish better provision made for his own reputation, which I favour.

But I beg and implore Scaliger that, just as he judged himself free to correct and amend the Gregorian calendar, which almost the whole Christian world has approved, so he should allow others the same freedom to correct his own correction — not out of a wish to disparage, but out of a wish to admonish; and that he should take it with an even mind that this little book of his reaches men's hands in the most thoroughly corrected state possible, which is exactly what he

seems to want for the Gregorian calendar. Indeed the remarkable restraint he displays in the very preface to his *Castigatio* bids me be of good cheer. I need have no fear about his letting Clavius admonish him as a friend, since he himself professes *that he would have thought more of being criticized by Clavius than praised by many*; nor need I fear that he will acknowledge grudgingly whatever errors there may be in this little book, since he admits *that, being human, he could have gone wrong*. And all the more so because, in a matter of this kind, if he has gone wrong he has gone wrong not against himself but against the commonwealth — and this on his own verdict, since he says that our error is *a public one* and *leads the field*. Now if an error is detected in the very point on which he charges us with error, it will surely have to be reckoned the graver in proportion as the man errs more grievously who, caught in error himself, mocks those who travel the straight high road. We shall do it the more gladly, so as to bring a man eager to track down the truth back onto the road once he has been shown his own error. So then, having set out Isaac Argyrus's method, he proceeds to correct the Lilian — or rather the Gregorian — calendar as follows.

SCALIGER.

THE REFUTATION AND CORRECTION OF THE LILIAN YEAR

So the concern to correct the observance of Easter is nothing new: it has been under discussion for more than two hundred and fifty years. When the matter was taken up again within our grandfathers' memory and entrusted by the Supreme Pontiff to that most learned man Johannes Regiomontanus [Regiomontanus], it could not be brought to a conclusion, both because of his death and because of other disturbances that intervened. In recent years, however, Gregory XIII proposed a new correction of the year and won the approval of the greater part of Europe for it, so that this new form, received with warm consent, has entirely erased the old Julian one from the minds of ordinary people. ^a Since, then, it is in the public interest that the calendar be kept as free from error as possible, while it contains things that could be improved — indeed things that must be corrected outright — I judge that if I set out my own view on the matter, better minds and better judgements will be roused to do the same.

[Margin: a]

CLAVIUS.

^a There is in fact nothing we desire more than that the Gregorian calendar should both be, and be reckoned, as good and as free from error as possible. That was

also the reason why, by order of Gregory himself, Supreme Pontiff, it was put before virtually all the mathematicians of the Christian world for examination, and was not published until, everyone's opinions having been carefully gathered, it was established to be sufficiently corrected. Nor would Joseph Scaliger have been passed over on that occasion — a man no more distinguished by his father's learning than by his own — if he had had as great a name among mathematicians as he has among men of letters and learning. But since he has now entered the ranks of the mathematicians and demands a hearing from us, let him certainly be heard, if that is what he wants — now that the business is finished, seeing that he could not be heard while it was still whole.

SCALIGER.

I am well aware how hard a thing it is to touch this sore, since at the end of my books *On the Emendation of Time* [*De Emendatione temporum*] I spoke of this business only briefly and sparingly; and yet for all that restraint I could not escape the hatred and the abuse of men who think they are being wronged if we do not swear by their words and suppose that they themselves can never be mistaken. ^b And so, as I hear, the task was assigned to the most learned mathematician Christoph Clavius of writing against me; and, so that I should not be in doubt about it, Antonio Possevino [Antonius Posseuinus], in that lukewarm *Apology* of his against Chytraeus [David Chytraeus], threatens me with trouble from Clavius.

[Margin: b]

CLAVIUS.

^b No task was ever assigned to me of writing against Scaliger; it was to break Maestlin's [Michael Mästlin's] intolerable effrontery, which is what we tried to accomplish in the *Apology for the Gregorian Calendar*. In that book we plainly and clearly refuted everything that this most reckless man had blurted out against the new calendar. Nor does Possevino *threaten* Scaliger with any *trouble from Clavius*; he merely gives notice of that *Apology* of ours, which we have mentioned, to the calendar's assailants. If only Scaliger had examined it out of a desire to learn the truth rather than to contradict! He would certainly have turned his mind from *Correcting* the calendar to defending it, and with a better reputation for prudence, or for talent.

SCALIGER.

I waited for that book most eagerly and for a long time, ^c and many people either told me or wrote to me that they had actually seen it in Clavius's hands.

[Margin: c]

CLAVIUS.

^c The whole thing is a fabrication. Those men must have been dreaming, the ones who *either told or wrote* that they had seen it *in my hands* — which never happened. Even so, I am glad that Scaliger brings that eagerness of his, that hunger still unappeased, to this admonition of ours, so that in future he may become both more modest and more careful.

SCALIGER.

[?] For my part, since *I would have set more store by being criticized by Clavius than praised by many*, I cannot make out what occasion, or what material, he could have found for writing against me, since I have said nothing that could offend the feelings of any decent man. For if there are errors in my books — and why should I not admit that, being human, I could have gone wrong? — men of such stature ought not to divert their thoughts from better occupations to refuting my trifles. I release them from that care. Let them not waste their effort: I shall correct my own errors better, and more willingly, than they can point them out. What I have done wrong, I have done wrong to myself, not to the commonwealth. *Their* error is a public one, and it leads the field. And so I urge them — with all ambition and ill will cut away, as men of liberal education ought to behave — not to love their own work so much, or hate us so much, that they give up hope that something better may one day be got from us.

CLAVIUS.

^a There is no need of urging. You will be taking this error from us with our full goodwill, if you prove that it is an error; and you will find us not only fair-minded but grateful as well. Meanwhile I await what these things finally are that you suppose can be supplied better by you — since you are confident that you alone have seen more than everyone else.

SCALIGER.

^c[?] Just as Possevino [Antonio Possevino] did — who in his *Apologia* attacks our method for the solar cycle of the Lilian year with the utmost self-assurance,

though no better and no shorter method can be devised. And it is astonishing that a man who leaves nothing undone to persuade everyone that he alone is learned and wise should have taken so little thought for his own reputation. But both in that *Apologia* and in the *Bibliotheca* that has recently appeared he shows plainly that he has not read my work, or has not understood it — as when he says that I reject the decrees of the Fathers of Nicaea, or something else of that sort, φορτικὸν [Greek: *phortikon*, "burdensome," "offensive"] and uncivil. Let that censor of morals and critic of books show me where he read this anywhere in my whole work.

Are we to believe it? Or do those who hate invent dreams for themselves?

Will there ever be an end to writing, if anyone chooses to go hunting through his *Bibliotheca*?

Will anyone think it worth wasting his leisure on such concerns?

Has any work ever come out that was more open to criticism, fair and unfair alike, than his *Bibliotheca*? Who ever saw self-assurance more secure about another man's judgment? But let me return to the point. So far as he himself knows, I have never criticized the plan of correcting the year or Easter, and everyone who reads my writings will admit that I was of no other mind. What I do criticize in this new scheme, and what needs correcting altogether, I shall set out — once I have first said something about the design of the author of the year.

CLAVIVS.

☞[?] You attack Possevino far too angrily, my dear Scaliger — not to say intemperately — a man learned, moderate, and devout. What word is there about you in his *Apologia* that is not full of modesty, courtesy, and respect? Or was this what galled you, that he disapproved of your method? But criticisms made by men who disagree with one another are not to be blamed, provided they keep clear of abuse and insult. Debate about doubtful matters is the exercise of talent and the parent of truth. Besides, why should he not have been permitted to disapprove of your method, when you were permitted to disapprove of the Lilian method, approved by papal authority? Consider, please, whether — if anyone compares the modesty of that *Apologia* with this anger of yours, to put it as gently as possible — he may not apply that old line to you:

He has hay on his horn: keep well clear. [Horace, *Satires* I.4.34]

But remember: nothing is done rightly in anger, and nothing done rightly is judged rightly in anger. Now as for the *Bibliotheca*: grant that Possevino may

perhaps be charged with some fault of human error, since he chose to pass judgment on nearly all the distinguished writers, knowing that so many judges would afterwards be passing judgment on his judgment — even so, he deserves not merely pardon but perhaps praise as well. For, to say nothing of Cicero and Jerome, he did the same thing your father did, that most learned man; he did the same thing you do every day. I do not see why he should be forbidden what you reckon everyone concedes to be lawful for you — unless of course you take this liberty of judging other men's books, and this confident security about another's judgment, to be your family's private property. "But there is much in that *Bibliotheca* that you do not approve of." Granted. There will certainly be much that others both approve of and profit by. That everything you write should win everyone's approval is more to be wished for than hoped for. Moreover, since you harry that *Bibliotheca* so contemptuously, I am afraid that to those who have read it you will yourself seem to be indulging in that very φορτικὸν and uncivil behaviour which you censure in Possevino without cause.

SCALIGER.

DE CYCLO SOLIS IN PERIODO Liliana.

[On the solar cycle within the Lilian period]

From the Alphonsine measure of the tropical year — than which no better has so far been found — experts observed long ago that in 134 Julian years one bissextile day is superfluous, and in 402 years, three. But leaving the two years out of account, they thought that 400 years could safely be taken as the proper period, since 400 is a multiple of four and therefore better suited to the reckoning of the bissextile day; over that interval only 97 bissextile days are to be used, and when the period comes round — that is, in the four-hundred-and-first year — the Kalends of January fall again on the same dominical letter. For when 400 Egyptian years are divided by seven, one is left over, and this combined with the 97 bissextile days makes 98, a multiple of seven. So if, for example, the Kalends of January of the first year fell on a Sunday, the last day of December of the four-hundredth year will fall on a Saturday, and accordingly the Kalends of the four-hundred-and-first year will be brought round to a Sunday, as in the first year. This, then, will be the proper period of the tropical year.

Since the experts had settled this long ago, a hundred years back or more, Lilius [Aloysius Lilius] embraced this period and set about the correction of the year, ten days being removed from the calendar so that in place of the xi of March, that is, the xxi should be reckoned. Since, then, three bissextile days must be suppressed in four hundred years, he takes them away from the end of the first,

the second, and the third century, but allows the end of the fourth century to be bissextile — so that, for example, February of the years of Christ 1700, 1800, 1900 will not be of twenty-nine days but of twenty-eight, whereas February of the year 2000 will be of twenty-nine. The Lilian Tetracosiiëteris [*Tetracosiieteris* — the four-hundred-year period], therefore, consists of four centuries, each century of three solar cycles together with sixteen years of a fourth cycle begun, so that in the first, second, and third centuries one bissextile letter is omitted in year xvi of the fourth solar cycle. This is just as you have it in the table [*Laterculus*] set out below, in which, under the centuries 0, 100, 200, opposite year 16 of the cycle, you have a doubled letter, one capital and one small — Cb, Ed, Gf — and both run on in the years 16, 44, 72. But in year 100 — that is, in year 16 of the fourth cycle — the small letter begins the cycle of the following century, as you see in the table. We assume, then, that the equinox has always fallen on xxi March from the beginning of the epoch of Christ. So, casting away all the 400s from the years of Christ, there remain —

— the years of the current Tetracosiiëteris. In these you must consider which century it is, and which year of the solar cycle within the century; and from the table you will have the Lilian dominical letter. Suppose I want to know the dominical letter of the present year 1594. Casting away all the 400s, there remain 394 years of the running century-count, of which three centuries have already elapsed, while year 94 of the fourth century is now running. In the table, among the expanded years, opposite year 94 under 300 — that is, under the third century elapsed — you have in the common corner the letter B, the dominical letter of this year 1594. Again, suppose I want to know the dominical letter of the year 1800. Casting away all the 400s, there remains the hundredth year of the second century. Under 100 — that is, with the first century elapsed — opposite year 100 you have in the common corner Ed. And because it is the hundredth year of the century, the letter d will not make a bissextile day but will simply run on, as in a common year. But in the years 1744 and 1772 both letters will be taken, because the bissextile day is reckoned there. Again, from the years of Christ 1600, casting away 400, there remains the hundredth year of the fourth century. Under 300, opposite 100, there occurs in the common corner the doubled letter B A — both, note, capitals. By this it is marked that A is always taken for the bissextile day; that is, that both letters have their place in that year, the first from January to the position of the bissextile day, the second from the position of the bissextile day to the end of the year. ^a This method is extremely quick, and none better can be had — none, at least, that is to be learned from a written table.

[Margin: a]

LATERCVLVS CYCLI SOLARIS LILIANI. [Table of the Lilian solar cycle]

| Anni expanfi
Centuriæ Lilianæ | 1
0
0 | 2
0
0 | 3
0
0 | Anni
Chrifiti | Character Cycli ✱
Iuliani |
|----------------------------------|----------------|-------------|-------------|------------------|------------------------------|
| 1 | 2 5 8
9 7 5 | G B | D F | 1 | 2 xxv
8
0
1 |
| 2 | 3 5 8
0 8 6 | F A | C E | 101 | 2 xij
9
0
1 |
| 3 | 3 5 8
1 9 7 | E G | B D | 201 | 3 j
0
0
1 |
| 4 | 3 6 8
2 0 8 | D F | A C | 301 | 3 xvij
1
0
1 |
| 5 | 3 6 8
3 1 9 | B D | F A | 401 | 3 xvij
2
0
1 |
| 6 | 3 6 9
4 2 0 | A C | E G | 501 | 3 v
3
0
1 |
| 7 | 3 6 9
5 3 1 | G B | D F | 601 | 3 xxj
4
0
1 |
| 8 | 3 6 9
6 4 2 | F A | C E | 701 | 3 ix
5
0
1 |

| Anni expansi
Centuriæ Lilianæ | 1
0
0 | 2
0
0 | 3
0
0 | Anni
Chrifiti | Character Cycli ☼
Iuliani |
|----------------------------------|---------------------|-------------|-------------|------------------|------------------------------|
| 9 | 3 6 9
7 5 3 | D F | A C | 801 | 3 ix
6
0
1 |
| 10 | 3 6 9
8 6 4 | C E | G B | 901 | 3 xxv
7
0
1 |
| 11 | 3 6 9
9 7 5 | B D | F A | 1001 | 3 xij
8
0
1 |
| 12 | 4 6 9
0 8 6 | A C
G B | E G
D F | 1101 | 3 j
9
0
1 |
| 13 | 4 6 9
1 9 7 | F A | C E | 1201 | 4 j
0
0
1 |
| 14 | 4 7 9
2 0 8 | E G | B D | 1301 | 4 xvij
1
1
0 |
| 15 | 4 7 9
3 1 9 | D F | A C | 1401 | 4 v
2
0
1 |
| 16 | 4 7 1
4 2 0
0 | C E
b d | G B
f A | 1501 | 4 xxj
3
0
1 |
| 17 | 4 7
5 3 | A C | E G | 1601 | 4 xxj
4 |

| Anni expansi
Centuriæ Lilianæ | | 1
0
0 | 2
0
0 | 3
0
0 | Anni
Christi | Character Cycli ☼
Iuliani |
|----------------------------------|------------|-------------|-------------|-------------|-----------------|------------------------------|
| | | | | | | 0 |
| | | | | | | 1 |
| 18 | 4 7
6 4 | G B | D F | 1701 | 4 | ix |
| | | | | | 5 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 19 | 4 7
7 5 | F A | C E | 1801 | 4 | xxv |
| | | | | | 6 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 20 | 4 7
8 6 | E G
D F | B D
A C | 1901 | 4 | xiiij |
| | | | | | 7 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 21 | 4 7
9 7 | C E | G B | 2001 | 4 | xiiij |
| | | | | | 8 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 22 | 5 7
0 8 | B D | F A | 2101 | 4 | j |
| | | | | | 9 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 23 | 5 7
1 9 | A C | E G | 2201 | 5 | xviij |
| | | | | | 0 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 24 | 5 8
2 0 | G B
F A | D F
C E | 2301 | 5 | v |
| | | | | | 1 | |
| | | | | | 0 | |
| | | | | | 1 | |
| 25 | 5 8
3 1 | E G | B D | 2401 | 5 | v |
| | | | | | 2 | |
| | | | | | 0 | |
| | | | | | 1 | |

| Anni expansi
Centuriæ Lilianæ | | 1
0 0 | 2
0 0 | 3
0 0 | Anni
Chrifiti | Character Cycli ☼
Iuliani | |
|----------------------------------|------------|------------|------------|----------|------------------|------------------------------|-------------|
| 26 | 5 8
4 2 | D F | A C | 2501 | 5 | xxj | 3
0
1 |
| 27 | 5 8
5 3 | C E | G B | 2601 | 5 | ix | 4
0
1 |
| 28 | 5 8
6 4 | B D
A C | F A
E G | 2701 | 5 | xxv | 5
0
1 |

But a method that can be held in memory is far quicker, if you keep hold of the four initial letters of the four centuries — G, B, D, F. For these, take four words from that very well-worn mnemonic verse — *Gratis, Bonus, Dei, Filius*:

Filius esto Dei, Cælum Bonus accipe Gratis.

[Be the Son of God; good man, receive Heaven freely.]

For the old cycle is interrupted four times. And so, at the beginning of the first century, the solar cycle, starting from GRATIS, sets that word at the base of the index finger [*index*]; FILIVS at the base of the middle finger [*medius*]; ESTO at the base of the ring finger [*medicus*]; DEI at the base of the little finger [*auricularis*]; and so on in turn, as is usual in the common method of the solar cycle. At the beginning of the second century take BONVS at the base of the index finger, ACCIPE at the base of the middle finger, and so on, as is clear from the formula set out below:

| III | | III | | II | | I |
|--------|------|-----|-------|-------|--------|--------|
| Filius | Efto | Dei | Cælum | Bonus | Accipe | Gratis |

In this, GRATIS has I, for the first century; BONVS II, for the second; DEI III, for the third; FILIVS IIII, for the fourth. From this you also gather that the break in the weekly reckoning comes about by the omission of a single letter: the break from GRATIS to BONVS, that is, from the first century to the second, comes about by omitting the word ACCIPE;

and the break from BONVS to DEI by omitting the word CÆLVM; and so with the rest. Anyone who wants to disparage so quick a method must be either malicious or ignorant of these matters. And yet this is the very method Possevino condemns.

But if anyone wishes to handle this by the Julian solar cycle, he can do it as follows. Let him take the year of Christ from the table, out of the collected years of Christ, if it is found there exactly; if not, the next lower one. The character of the solar cycle taken opposite it, and then counted out in the formula of the solar cycle up to the current year of the solar cycle, will show the Lilian letter. An example. I want to know the dominical letter of the year 1601. The year is found exactly among the collected years of Christ. The character opposite it is XXI; in the formula of the solar cycle this will be the first year of the solar cycle. And so, since in the said year 1601 the year of the solar cycle is the fourteenth, that number counted from XXI will end in the formula at VI, beside which the letter G is the dominical letter of the year proposed, 1601. Again, I want to know the Lilian dominical letter for the year 1741 — a number that is not found exactly among the collected years. The character of the next lower number, 1701, is IX; and 1741 is the fourteenth year of the Julian solar cycle. In the formula, fourteen counted from IX will end at XXII, and therefore at the letter A, which is the Lilian dominical letter of the year proposed, 1741. You will find this true by the other method as well, opposite the expanded year 41 under 100, with the first century elapsed: there stands the same letter A. And as for this method too — although it is the same as the Lilian one — how much quicker it is than the Lilian itself, I leave to be judged by a modest man who is expert in these matters, and not by Possevino.

CYCLVS SOLIS IVLIANVS. [The Julian solar cycle]

| Annus cycli | Litera |
|-------------|--------|
| 1 | GF |
| 2 | E |
| 3 | D |
| 4 | C |
| 5 | BA |
| 6 | G |
| 7 | F |
| 8 | E |

| Annus cycli | Litera |
|-------------|--------|
| 9 | DC |
| 10 | B |
| 11 | A |
| 12 | G |
| 13 | FE |
| 14 | D |
| 15 | CB |
| 16 | B |
| 17 | AG |
| 18 | F |
| 19 | E |
| 20 | D |
| 21 | CB |
| 22 | A |
| 23 | G |
| 24 | F |
| 25 | ED |
| 26 | C |
| 27 | B |
| 28 | A |

CLAVIVS.

^a It is indeed so, as the proverb says: everyone finds his own beautiful — you delight in your method, I in mine. To others the method we proposed in the *Apology* seems both better and quicker, the one by which the dominical letter is found without the solar cycle (as we showed in Book 3 of the *Apology*) — and found from memory at that, so that neither Scaliger nor anyone else should miss that feature in it. But I do not in fact reject this method of Scaliger's for the time after the correction of the calendar: I see that it can be of use. It does, however, have this defect, that it holds only for time to come and not for the past as well. For if it is carried back into earlier years it will show a false dominical letter, even if you assume, as he wishes, that the equinox falls on 21 March. To take an example: in the year 325 — that is, at the time of the Council of Nicaea — the

equinox had its true, not its fictitious, seat on 21 March; yet Scaliger's method offers the dominical letter D, when in fact it was C.

SCALIGER.

DE EPACTIS LILIANIS.

[On the Lilian epacts]

Hipparchus was the first of all to discover that in 304 Egyptian years and 75 days a complete ἀποκατάστασις [Greek: *apokatastasin*, accusative of ἀποκατάστασις, "restitution" — the Moon's full return to the same position; printed with the στ ligature sort] of the Moon is accomplished, so that nothing is left over in the lunar reckoning [*epilogismus lunaris*]. But 304 years with 75 days fall short of 304 Julian years by one day, since 76 bissextile days belong to 304 Julian years.^a Therefore the Julian epacts in the calendar will run one day ahead after 304 years.

[Margin: a]

CLAVIVS.

This rests on authority rather than on truth; examined more carefully it totters, and the whole of Scaliger's edifice, raised as it is on this substructure, collapses along with it. For if the Moon ran ahead of its seat by one day — that is, by 24 hours — in 304 years, it would anticipate by 1½ hours in a single nineteen-year cycle. That is false, and against all the astronomers. For as I showed in Book 2, chapter 1, of the *Apology*, from Ptolemy, Alfonso [Alfonso X — the Alphonsine Tables], and the Prutenic Tables [Reinhold, *Tabulae Prutenicae*], in one cycle it anticipates only 1 hour, 27 minutes, 31 seconds, 55 thirds, so that in 312½ years it anticipates roughly one day. But not to go over ground already covered: anyone who wants more on the subject should read through chapter 1 of Book 2 of the *Apology*. Yet I really cannot wonder enough why Scaliger — than whom, for all I know, no one has been more practised at sifting and harrying other men's discoveries — should in this matter have shown himself so unlike himself; and why he did not seek genuine credit by refuting what is false, when he often seeks fame for his name by harrying what is true. And this especially, since that very Isaac Argyrus [Isaac Argyros], whom he embraces so warmly, could easily have warned him of the point. For Argyrus (as can be gathered even from him, in the excerpt on the correction of Easter) taught in express words that the Moon does not run exactly one day ahead in 304 years.

SCALIGER.

Suppose the new moon, or the first day of the lunar month, falls on the third of December in the Julian calendar in this year 1594, in which the epact is XVIII — which, by the old practice of the computists, begins from March. So, since December is the tenth month from March, with the epact 18 the first day of the moon falls on III December. But after 304 years — that is, in the year 1898 — the same new moon [*neomenia*] will have run one day ahead, and will no longer be on III December but on II December. Therefore, for indicating the new moon, that old epact 18 will be useless, and epact 19 must be taken in its place. Finally, after another 304 years — that is, in the year 2202 — a new epact XX will displace epact 19. So in the Julian year the epacts both press upward and increase by a unit, in proportion to the decrements of the Hipparchan period. The contrary happens in the tropical year: there the epacts are thrown downward, after 228 or 247 years. So in this year 1594 the new moon falls on 13 December, and the Lilian epact is 8. In the year 1841 the same new moon will come down to the 14th day, and the epact will be 7 — and so always, unless something intervenes to prevent it. The epact, then, increases in the Julian year and decreases in the tropical. Therefore the epact —

— both in the Julian year and in the tropical, rise upward from unity κατὰ μετέμπτωσιν [Greek: *kata metemptōsin*, "by metemptosis" — the shift of the epact that accompanies the solar equation] following the natural series, and sink downward, against the natural series, κατὰ προέμπτωσιν [Greek: *kata proemptōsin*, "by proemptosis" — the anticipation of the lunar reckoning]. If, then, the epact becomes 19 out of 18 in the Julian year, and 9 out of 8 in the tropical, it follows that the epacts run through the whole set of thirty numbers after some thousands of years. A perpetual cycle of epacts will therefore have to be set up from X I to X X X, propagated by always advancing through the number eleven. And since in the calendar the series of increments (or of decrements) is retrograde, no series other than a retrograde one can be entered in the calendar.

^a It is therefore not true, as that most learned mathematician Clavius writes at the beginning of Chapter I I I of the second book of the *Apologia*, that the epacts can descend downward from one to thirty according to the natural series. Nor do I see what defence he can muster for his own view. From what we have demonstrated, they must be wholly retrograde, and no other arrangement can be established. Epacts of this kind, running through thirty in retrograde order, we ourselves once saw in two old calendars: one was prefixed to a Roman Missal most elegantly written, the other to a very ancient Psalter.

[Margin: a]

CLAVIVS.

^a But I shall show that it *is* true, and prove it to you personally, most learned Scaliger, if I now explain at greater length what I there touched on only briefly, and make you see what you deny you can see — namely, what defence I can muster for my own view. The epacts in the calendar are indicators of the new moons; so much so that any other signs whatever could be put in their place. Take the present case. Now, when the epact is 13, the new moon falls on 18 March, and in the following year on the 7th, with epact 24 running — the value the table of epacts current in this century gives. In just the same way, if the epacts were arranged in direct order, so that they did not differ from the days, then for epact 13 the table of numbers showing the new moons would offer us the number 18, and so once again the new moon would fall on 18 March. Then in the following year the same table would present us with the number 7 for epact 24 — and that number 7 is of course eleven units *less* than the number 18 of the preceding year, just as epact 24 is eleven units *greater* than epact 13 of the preceding year. Indeed, here at Rome a calendar was submitted to the calendar commission by an experienced mathematician in which the 30 numbers of the epacts were written out in direct order, and they indicated the new moons perfectly correctly — exactly as the epacts themselves do when arranged in retrograde order. But since in those numbers the increase of the epacts by 11 units is not preserved — the movement goes by decrease instead — we preferred the retrograde order, so that the new moons should be indicated in a more natural way; and this we set out in book 2, chapter 3, of the *Apologia*. It is clear, then, that the epacts *can* run in direct order in the calendar, even though in that case they no longer preserve the reckoning proper to epacts, but are merely signs of the new moons. And this is precisely what we meant to convey in the *Apologia*.

SCALIGER.

Once a perpetual cycle of epacts had thus been established, and the epacts entered in the calendar in retrograde order, ^a Lilius saw that the Dionysian Paschal fourteenth in the Julian year had run three days ahead through the whole cycle without any exception, except in years 8 and 19 — that is, when the epacts are 28 and 29. Those two epacts anticipate the Dionysian seat not, like the remaining 17, by three days, but by four. They will therefore anticipate this century's fourteenth by one day. For today, when the epact is 28 in the Julian calendar, the fourteenth falls on X V April. Epact 28, therefore, must be set at 2 April. Again, today's fourteenth, when the epact is 29, falls in the Roman calendar

on 14 April. So epact 29 is due to the Kalends of April. And since the Kalends of March begin from epact 30 (or 0, which is the same thing), the same epact 0 will fall again on the last day of March — given that the Kalends of April claim epact 29.

[Margin: a]

CLAVIVS.

This is to play the soothsayer and to try to divine. Lilius and the founders of the Gregorian calendar never so much as dreamed of that way of placing the epacts in the calendar. The true and genuine account has been explained by us in chapter 3 of book 2 of the *Apologia*, to which we refer the reader.

SCALIGER.

But we are pressed by a difficulty from the other side. The civil lunar months, as everyone knows, are alternately full and hollow — that is, of thirty and of twenty-nine days. Now suppose we set the epacts so that 0 falls on the Kalends, and on the last day of March, and on 30 April, and so on in succession. Then all the lunar months will have been of thirty days, and the lunar year, which is unfolded in 354 days, will consist of a solid 360 — which is absurd. Besides, once this is done, epact X X I I I I remains useless for the method of the Paschal fourteenth. The nearest Paschal limit is 21 March, the furthest 18 April; but epact 24 sets the Paschal fourteenth on X I X April, that is, beyond the furthest limit. The same epact will also place the fourteenth in March on the X X th of the month, short of the nearest limit. Epact X X I I I I, then, will always be useless for Easter — and especially in this century, since with the ten days cut out the old Julian epact I I I I is today X X I I I I, in year X I I I I of the cycle, whose Dionysian fourteenth moon used to stick at X I I April, but today, κατὰ προέμπτωσιν by three days, is at I X April. With the ten days taken away, then, it is found at X I X April in the Lilian calendar, as has already been said. What remedy, then, will be devised for this evil?

The system of epacts was devised chiefly for the sake of the Paschal fourteenth. ^a Now the epacts that show the fourteenth in March must be the same epacts that show the fourteenth in the other months. For example, when the epact is X V I I I, it is epact V that shows the fourteenth moon throughout the whole year. But this cannot happen if epact X X I I I I is set at V I April. For epact X I will show the fourteenth of March; and so, if epact X I is to show the fourteenth in April as well, epact X X I I I I must necessarily stand at V April. There will therefore be two epacts in the same seat.

[Margin: a]

CLAVIVS.

Of course this is not true in every case. Even if it turns out so in the example you bring forward, still, whenever the pairing [*collegium*] of the two epacts 25, 24 — or, as you would have it, of epacts 0, 29 — falls in between, this order is inter-

—rupted. For when the epact is 8, in some months it is epact 24 that shows the fourteenth, in others epact 25. The same epact, then, will not be able to show the fourteenth for the whole year. But perhaps you will say that the fourteenth belonging to epact 8 does not fall in March but in April. Very well — let us take epact 22 in February, whose fourteenth in March is indicated by epact 20. Next, epact 3 indicates the new moon, and epact 19 shows its fourteenth in April. Where, then, is epact 20 hiding, the epact that indicates the fourteenth — which it surely ought to be doing, if Scaliger's reckoning did not limp? But however the matter stands, we took no account of it, since it seemed to have no bearing on our own purpose.

SCALIGER.

^a If this were observed at alternate syzygies, the months would indeed have come out alternately full and hollow, as the reckoning of the civil lunar year requires. But another obstacle is raised. Since the pairing of the two epacts X X V, X X I I I I has been thrown together onto one and the same day, 5 April, then whenever it happens that both epacts are found within the same cycle, the new moon will necessarily fall twice on the same day within a single cycle — which is absurd. From the year 1900 to the year 2199, epact X X V will be at golden number X V I I, and epact X X I I I I at golden number V I. From the year 3100 to 3399, epact X X V will be at golden number xij, and epact xxiiij at the first golden number. In the year 3800, to the year 4099, epact xxv will agree with golden number xv, and xxiiij with the fourth golden number. Finally, from the year 4500 to the year 4699, epact xxv goes with golden number xviiij, and epact xxiiij with golden number vij. So both epacts, xxv and xxiiij, occur within the same cycle.

CLAVIVS.

^a Here the most learned Scaliger argues entirely correctly. And in fact we reasoned no differently in the *Apologia*, book 2, chapter 3. Of course, the reckoning of the new moons requires this.

SCALIGER.

^a The way that seemed good for remedying this drawback was to join the black epact 25 with epact xxvi. That will have its place whenever the golden number is greater than xi; for then that blackened [*atrata*], extraordinary epact 25 will be taken in place of the ordinary red [*miniata*] xxv — because, as we said, from the year 3100 to the year 3399 epact 25 agrees with golden number xij, and there is no smaller golden number to which that epact could ever belong. For the same reason, whenever the golden number is less than xij, the ordinary red epact xxv is the one to be taken.

CLAVIVS.

^a And the author of the calendar did indeed apply this remedy prudently. The proof is that Scaliger himself, who left this remedy aside in that pairing of epacts 0, 29 of his, has by no means escaped the drawback — as we shall show in its proper place.

SCALIGER.

^b We have treated these matters at some length because the most learned Clavius, in his *Apologia* against Maestlin, explained neither why epact xxix was marked at the Kalends of April in place of xxviii, nor why epact xxiiij rather than any other was dislodged from its own place. Anyone who sets these reckonings of ours against his will easily discover which of the two are the truer.

CLAVIVS.

^b How truly all this is said will be easily grasped by anyone who reads through chapter 3 of book 2 of the *Apologia*, where the reason for this arrangement of the epacts in the calendar is set out — and set out so fully and copiously that Scaliger could have spared himself this labour, had he not wished to take on pointless work and to grow great at other men's expense.

SCALIGER.

Again, whenever the epact of the first golden number is one, then epact xix coincides with the last golden number, xix. That is why the black epact 19 was thrown in with x x on the last day of December, so as to have a place whenever the first golden number is one. For then, as has already been said, epact x i x coincides with golden number x i x. One, as we said, is the first golden number in the following year, marked at x x x January. From the Kalends of December to 30

January there are three syzygies. And since epact x i x is the one running when one is the first number, while no epact x i x is marked in the calendar after the Kalends of December down to 30 January, the black epact 19 must therefore be taken in place of x x, so that two syzygies do not pass without an epact. This will not happen except in the years 1595, 1614, 1633, 1652, 1671, 1690. For many thousands of years would have to be waited out before the first golden number is one again.

CLAVIVS.

Truly, if he had placed that black epact 19 which he so despises on the last day of February, he would not have run into such rough going. As it is, he is forced to set up a lunation of 59 days, as we shall show below; and no one fails to see how inept — indeed how monstrous — that is.

SCALIGER.

Once these points had been noted, there remained the table of the equation of the epacts, which records the changes of the epacts according to their μετέμπτώσεις [Greek: *metemptōseis*, "metemptoses" — the successive shifts of the epact; the print appears to carry accents on both ε and ω, the standard form being μετεμπτώσεις] in the centuries of the years of Christ. The starting point was taken from golden number iij, which in the times of the Council of Nicaea was to be en

—tered at the Kalends of January. And so, whenever the current golden number has to be carried across from the table of the equation into the table of the perpetual cycle of the epacts, one must go back to the third cell from the cell indicated, so as to have the first golden number current in the year proposed. ^a We, however, shall add a more expeditious method of the epacts than the Lilian one — one which shows the first number immediately, without that going-back. In the appended table of the equation of the epacts, from the first year of Christ to 320 (which is the century of the Council of Nicaea), the epact of the first golden number will be 7.

[Margin: a]

TABVLA ÆQVATIONIS EPACTARVM. [Table of the equation of the epacts]

| Anni Chrifti | 1 | 320 | 500 | 800 | 1100 | 1400 | 1582 | 1600 |
|------------------|---|-----|-----|-----|------|------|------|------|
| Character Epactæ | 7 | 8 | 8 | 9 | 10 | 11 | 1 | 1 |

| | | | | | | | | |
|------------------|------|------|------|------|------|------|------|------|
| Anni Chrifti | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 |
| Character Epactæ | 0 | 0 | 29 | 29 | 29 | 28 | 27 | 28 |

| | | | | | | | | |
|------------------|------|------|------|------|------|------|------|------|
| Anni Chrifti | 2500 | 2600 | 2700 | 2800 | 2900 | 3000 | 3100 | 3200 |
| Character Epactæ | 27 | 26 | 26 | 26 | 25 | 25 | 24 | 24 |

| | | | | | | | | |
|------------------|------|------|------|------|------|------|------|------|
| Anni Chrifti | 3300 | 3400 | 3500 | 3600 | 3700 | 3800 | 3900 | 4000 |
| Character Epactæ | 24 | 23 | 22 | 23 | 22 | 21 | 21 | 21 |

| | | | | | | | | |
|------------------|------|------|------|------|------|------|------|------|
| Anni Chrifti | 4100 | 4200 | 4300 | 4400 | 4500 | 4600 | 4700 | 4800 |
| Character Epactæ | 20 | 19 | 19 | 19 | 18 | 18 | 17 | 17 |

CYCLVS EPACTARVM LVNARIVM PERPETVVS. [Perpetual cycle of the lunar epacts]

| | | | | | | | | | |
|---|----|------|--------|---------|----------|------|-------|---------|----------|
| 0 | xj | xxij | ijj | xiiiij | 25 / xxv | vj | xvij | xxviiij | ix |
| x | j | xij | xxiiij | iiiij | xv | xxvj | vij | xviiij | xxix |
| x | | | | | | | | | |
| x | xx | ij | xiiij | xxiiiij | v | xvj | xxvij | viiij | 19 / xix |
| | j | | | | | | | | |

CLAVIVS.

^a This is really excellent — that Scaliger, a man of the greatest ingenuity, should press our own work on us as his! For this method of the epacts is ours as well, and it is set out lucidly in book 2, chapter 4, of the *Apologia*, where the reason is also given why we put that other method ahead of this one. We preferred to begin from golden number *ijj* rather than from *j*, so that it should be plain that the little table of the perpetual cycle of the epacts was excerpted from the expanded table, and so that the characters set above the epacts in the perpetual cycle should indicate the age of the moon in the Martyrology.

SCALIGER.

Since in the Julian year the change of the epacts, as we have shown, ^a takes place after 304 years — but Lilius, disregarding the 4, supposed that the change in the Julian epact occurs every 300 years.

[Margin: a]

CLAVIVS.

^a But we showed above that it takes place after 312 $\frac{1}{2}$ years. And Lilius does not disregard those 12 $\frac{1}{2}$ years that go beyond the three centuries: he calls them back into the reckoning once they have filled out a new century, at which point we direct that 400 years be observed in place of 300. We followed this method as being the more accessible and the further removed from error, as we taught in chapter 4 of book 2 of the *Apologia*. The whole matter will be demonstrated more plainly by the calculation we shall append shortly.

SCALIGER.

From 320 to 500, then, the change will occur — after 300 years, that is. And because from 320 to 500 there are fewer than 300 years, it will be carried on as far as 800, from which another change will begin. And because from 320 to 800 there are more than twice 300 years, and yet only two changes have been made, the 8th and the 9th, this will be made good in the year 1100. And so on thereafter, until in the year 1400 the epact of the first golden number will be xi. It stays so until the year 1582, in which, with 10 days removed, in place of epact xi there will be epact 1 — which holds today and will hold until the year 1700, in which, after 300 years, the epact ought to have increased in the Julian year; but because of the omission of the leap day in the year 1700 it will be 0 instead of 1. It will be the same in the years that follow.

Suppose, then, I want to know the epact of a year of Christ after the removal of the 10 days. Take from the little table of equation the year of Christ proposed, if it is found there exactly; otherwise take the next lower year. The number placed under it will be the character of the first golden number; and if that character is counted out in the perpetual cycle of the epacts and the count ends at the number of the current year of the cycle, it will show the epact of the year proposed.

Suppose I want to know the epact of the year of Christ 1700. Since that year is found exactly in the table of equation, the character 0 set beneath it will be the first number of that year 1700. And since the golden number is x, then in the

perpetual cycle, if you count ten onward starting from epact 0, you will end at ix, which is the epact of the proposed year 1700.

Again, suppose I want to know the epact of the year 1914. Since that number is not found exactly in the little table of equation, the character 29, under the next lower year 1900, will be the first golden number of the proposed year 1914. And since golden number xv is running, in the cycle, counting fifteen from xxix, the count ends at iij, which is the epact of the proposed year 1914.^a This method is better than Lilius's — however ignorantly some Possevinus may be able to carp at it.

[Margin: a]

CLAVIVS.

^a As if this method too were not Lilius's! And as if we had not, for definite reasons, put it second to that other one, as we showed above. So there is no need to drag Possevinus in. He is a devout man and learned enough, and I do not know why Scaliger should have singled him out to run at so often in sport and mockery.

SCALIGER.

^b For what is the point of that stepping back to the third cell, if the work can be done more briefly? This is the scheme of Lilius, the author of this form; this is the method of that Year of his. Now I shall say what there is in it that the commonwealth has an interest in correcting.

[Margin: b]

CLAVIVS.

That stepping back is neither useless nor laborious, as we showed in book 2, chapter 4 of the *Apologia*, and indicated a little earlier.

SCALIGER.

OECONOMIAE EXEMPTILIVM bissextorum elenchus & castigatio.

[An examination and correction of the arrangement of the removable leap days.]

^a A flaw of no small size affects the four-hundred-year period [*periodus tetracosietERICA*] in the arrangement of the three leap days to be rejected, in that the rejection is hurried on before its proper time. For although the leap day ought to be taken away at the end of 132 years, it is taken away at the end of 100; and what was to be done in 400 years is anticipated at 300.

[Margin: a]

CLAVIVS.

^a There is no flaw at all, provided the omission of the leap days is fixed at the centesimal years, as we prescribe. On this plan the equinox is in fact kept in its own place more accurately than if the intercalary day were dropped now in the 132nd year, now in the 136th, as Scaliger would have it. All of this we set out at length in book 1, chapter 5 of the *Apologia* — which is why I am so astonished that a man of such ingenuity should be so forgetful as to sell off as his own this method of intercalating now at year 132, now at 136, along with a great many other things we ourselves presented in that same *Apologia*.

SCALIGER.

^b Again: what is done in a hundred years must wait two hundred years to be done again. For in the year of Christ 1900 the leap day is to be omitted; but in the year 2000 it is kept; in 2100 it is omitted once more. From 1900, the year of the earlier omission, to 2100, the year of the later one, is 200 years. And since an omission is to be made in 1800 as well, in one stretch of two hundred years there are two omissions, and in another two hundred only one.

[Margin: b]

CLAVIVS.

^b Reason compels it to be so, as is explained in that same chapter 5 of book 1 of the *Apologia*. The point is this: since three leap days have to be omitted within a span of 400 years, and these have already been passed over in the preceding 300 years, no further day ought to be omitted in the 400th year. The leap day must therefore be kept at that point, so as to compensate for what was taken away in excess during the 300 years. And that is restored precisely by removing no day in the 400th year.

SCALIGER.

^b What sort of inequality is this? In one century the leap day is omitted, in another it is kept. The learned Clavius has wanted to excuse this, and yet he has convinced no one — no one, at least, who sees anything at all in the matter.

[Margin: b]

CLAVIVS.

^b Consider instead whether it is not fairness, since a compensation is made in the way described — and indeed we have so persuaded everyone else of this

that no one, so far as we know at least, has as yet dared to disapprove of it apart from Scaliger. And in fact no one will be able to disapprove of it who does not wish both to be, and to be reckoned, an unjust judge of things.

SCALIGER.

^c Is there any reason at all, then, why we should not correct this?

CLAVIVS.

^c None — supposing it is fair to castigate and correct what is right. But let us see what this correction of yours finally comes to.

SCALIGER.

^d In 400 years there are twice 132 and once 136. Therefore let the leap day be omitted in the years 132, 264, 400. In that way no absurdity or inequality will be incurred — the sort that cannot be avoided when the leap day is rushed forward.

CLAVIVS.

^d But look how unfair this correction of yours is, and how you spoil the very thing you mean to correct. The inequality we introduce is an equitable one: it lets the equinox retreat from 21 March as little as possible. Our plan never allows the equinox to be a whole day away from its own place — a point about which the most exacting Scaliger gives himself no trouble. Add to this that even if that omission at the centesimal years were less accurate, it would still seem preferable to his, because it is far better suited to the ordinary person's grasp and memory. All of this we explained more fully in the *Apologia*, book 1, chapter 5.

SCALIGER.

In 132 years there are three complete solar cycles together with twenty years of an unfinished fourth; in 136 there are the same number of complete solar cycles together with 24 years of a fourth begun.^a Therefore the ancient solar cycle, which is broken four times in the Lilian form, will be broken only three times in this one. For the dominical letter of the first year of the period will be G, the letter of the year 133 D, the letter of the year 265 A. It will therefore be easier to keep three letters, G, D, A, than four, G, B, D, F. So, since in the year of Christ 1601 the solar cycle ought to begin from the letter G, in the year 1733 it will begin from the letter D, and in the year 1865 from the letter A. Hence, when the period comes round again, in the year 2001 the cycle will start from the letter G as before, and so on without end. On this plan the omission of the leap day will not be anticipated before its time.

[Margin: a]

CLAVIVS.

^a Your reasoning fails you, my dear Scaliger, while you hug that argument of yours as though it were your own little daughter. Since the solar cycle is never broken except when a leap day is omitted, who does not see that on our equation it is broken only three times, since in 400 years only three days are taken out — exactly as many as are taken out in your own method? You will grasp this more plainly if you look more carefully — not, I say, at our table set in the Gregorian Calendar, but at that very table of yours which you have printed in this little book. For you will see that only these three letters, B, D, F, are to be kept, and not four, G, B, D, F, as you wrongly suppose.

SCALIGER.

^b This flaw in the Lilian method — how many[?] other flaws it can go on to propagate in the reckonings of the equinox and of the Moon! These we leave to others to sift out.

[Margin: b]

CLAVIVS.

^b What you call a flaw in the Lilian method, I have shown to be no flaw at all. I am waiting for you to show what other flaws can be propagated from it. Meanwhile we for our part shall show — and we shall show it some little way further on —

how many flaws lie hidden in Scaliger's method, and how many others can be propagated from it.

SCALIGER.

EPACTARVM PERPETVO PER XI. PROGREDIENTIVM ELENCHVS.

[An examination of the epacts advancing perpetually by 11.]

^c Even moderately learned men know that the epacts, taken by the elevenfold increment, are sometimes greater and sometimes less than the computation [Greek: Ψηφοφορίαν (psēphophorian, "reckoning, computation")] of the mean motion of the Moon warrants. And so, if in this year the current epact indicates the new moons in the Calendar correctly, it may well happen that the epact of the following year does not do so reliably, since it has been arrived at by the perpetual addition of 11. Sometimes, then, the epacts run ahead of the new moons, and sometimes they fail to reach them.

[Margin: c]

CLAVIVS.

^c This is said perfectly truly. But how does it hang together that the very man who shows the epacts to be unequal should then charge the Gregorian Calendar with not always indicating the new moons and the fourteenth days exactly? Plainly, in order to set up a civil year, the Church is obliged to follow some fixed and generally accessible scheme of epacts. It therefore brings in epacts that advance by elezens — except that after golden number 19 it adds 12 rather than 11 to the epact, whatever that epact may be, so that the epact concurring with golden number 1 may be formed. This is set out at greater length in book 2, chapter 4 of the *Apologia*. I am therefore quite astonished that a matter so essential to the reckoning of the new moons could have slipped past the acumen of that most learned man Scaliger.

SCALIGER.

Since, then, the epacts were established of old by the Church chiefly for this purpose, that they should show the paschal full moons,^d it will be no light fault if we follow the ordinary progression of the epacts.

[Margin: d]

CLAVIVS.

^d But see how light the fault is in our scheme of epacts, and how seldom it occurs, even though they advance by elevens, as we have said. In three thousand whole years the fourteenth moon is shown in the Gregorian Calendar earlier than it should be scarcely once or twice. You will grant that this is a fault deserving pardon, since no cycle can avoid every inconvenience — and the more so when I go on to show how gravely and how often the fault is committed on your own scheme.

SCALIGER.

For they often run ahead of the full moon by one day,^c which the Latins call the fourteenth Moon, and the Greek authors of the Computus call now the [Greek: τεσσαρεσκαίδεκάτην (tessareskaidekatēn, "the fourteenth")], now the [Greek: πανσέληνον (panselēnon, "full moon")]. It is astonishing how much confusion the Latin authors make on this point, since they now run the fourteenth together with the full moon and now distinguish the two.

[Margin: c]

CLAVIVS.

^c If you ask why the Latins and the Greeks sometimes call the paschal term the fourteenth Moon and sometimes the full moon, the reason is this: the end of the fourteenth is the beginning of the fifteenth, that is, of the full moon — the day on which Easter is celebrated if it is a Sunday. This holds all the more because on the fourteenth day the Moon looks full, exactly as it does on the fifteenth. Besides, when they are looking for the paschal seat, they count the fourteenth moon from the day of the new moon that the cycle supplies, but in such a way that the day of the new moon is itself counted in. And they are not in the least troubled whether that day falls on the full moon itself, or comes one day before it (which they prefer), or one day after — as we showed abundantly in chapter 6 of book 2 of the *Apologia*.

SCALIGER.

For if the paschal term is the fourteenth Moon, and that is not the full moon: suppose, by way of example, that the fourteenth Moon falls on a Saturday. Then, according to the Canon, the Christian Easter will be celebrated on the Sunday following. But that day is the full moon. Therefore Easter will be celebrated at the

full moon,^a contrary to the Canon — given that the fourteenth is not the full moon. For in that case the fifteenth must be the full moon.

[Margin: a]

CLAVIVS.

^a And what Canon, pray, forbids Easter to be celebrated at the full moon? For my part I can find no such Canon. What I do find is that the Venerable Bede, Paul of Middelburg [Paulus Middelburgensis], and other most learned authors on the ecclesiastical Computus teach that Easter is never more correctly celebrated than at the full moon, that is, on Luna XV — since the remaining days from the full moon to Luna xxj are added on account of the Sunday, which does not always fall on Luna XV. We have discussed this at length in chapter 3 of book 1 of the *Apologia* and in chapter 6 of book 2. It remains, then, for Scaliger to show us where this Canon of his is hiding.

SCALIGER.

Therefore the fourteenth of the Christians is the full moon,^b and for that reason the fourteenth day marked by the epact in the old ecclesiastical Calendar is the paschal full moon. The author of the new year followed the same line: his epacts, as he himself pointed out, mark the new moons one day later, so that the fourteenth reckoned from them falls on the full moon.

[Margin: b]

CLAVIVS.

^b In fact this is not done deliberately; it merely happens by chance that the fourteenth of the Calendar falls on the full moon — the cause being the postponement of the new moons. And that postponement is not pointless: it secures for us that the paschal fourteenth does not run two days ahead of the full moon. That is what the author of the new year was after — not that the fourteenth reckoned from the new moon should fall on the full moon, although that does sometimes happen by chance.

SCALIGER.

^c Therefore the Lilian fourteenth is the fifteenth from the new moon, and so the full moon.

[Margin: c]

CLAVIVS.

^c The Lilian fourteenth can indeed sometimes be the fifteenth from the *true* new moon, as we said just now; but not from the new moon of the cycle, which is the hinge on which the matter turns. And so it will never be the full moon of the cycle.

SCALIGER.

I cannot therefore wonder enough that the most learned mathematician Christoph Clavius ^a not only takes a different view, but even holds that the Christian Easter may lawfully be celebrated at the full moon.

[Margin: a]

CLAVIVS.

^a Let the most learned mathematician Joseph Scaliger [Josephus Justus Scaliger] stop wondering; for I cannot but take a different view,

— sentire, since I have no wish to depart from the Canons and the Decrees of the Fathers, and since I see that *the Christian Easter is not only permitted to be celebrated at the full moon, but is even customarily so celebrated* — which I shall demonstrate not long hereafter.

SCALIGER.

^b WHO would grant him that? The fourteenth, he says, is the one that is counted inclusively from the new moon [Neomenia].

[Margin: b]

CLAVIVS.

^b You ask, my dear Scaliger? The Canons grant it; the Decrees of the Fathers grant it; every author on the computus grants it — for they all regularly count the fourteenth from the new moon of the cycle.

SCALIGER.

^c Why, then, is the Lilian fourteenth a fifteenth — and that on the testimony of Lilius himself, as we touched on a little earlier?

[Margin: c]

CLAVIVS.

^c I have already said that this happens by chance, out of the postponement of the new moons, a device that avoids greater drawbacks. And what Scaliger asserts is not true, namely that the Lilian fourteenth is always a fifteenth.

SCALIGER.

^d Why do the Greeks call the paschal term πανσέληνον [Greek: pansélēnon, "full moon"]?

[Margin: d]

CLAVIVS.

^d Because it stands only a little way from the full moon, as we have said.

SCALIGER.

^e Why is the fourteenth of the old Calendar the full moon that suited the age in which the epacts were devised and set beside the Calendar? Nobody denies that the Dionysian fourteenths, which the Church used down to the year 1583, are the ones that fitted the time of the Council of Nicaea — which Clavius himself also admits.

[Margin: e]

CLAVIVS.

^e You take this up as though it were true and invariable, and not rather accidental and often false. Just how far that is so can be seen from Book 2, chapter 6, of the *Apologia*, page 261. There it is plain enough that, in the old Calendar issued after the Council of Nicaea, from that time down to the year 495 the paschal fourteenth ran ahead of the full moon by nearly two days on ten occasions — as is gathered from the placement of the golden numbers and from the calculation of the full moons — which was not lawful; and that for the most part it ran ahead by a single day, which is what the Canons required. How, then, do you dare to say that the fourteenths of the moon around the time of the Council of Nicaea were full moons? And so that you may see, not merely in your mind but with your own eyes, that you assert this falsely — that the fourteenths of the moon around the time of the Council of Nicaea fell on the full moon — look at these nineteen years in the table set out below. You will find in them that, although they are nearly a hundred years distant from the Council of Nicaea, the fourteenth of the moon

counted from the new moon of the cycle never fell on the full moon, but always ran ahead of it by nearly two whole days — bissextile years excepted, in which the fourteenths of the moon of the cycle run ahead of the full moons by one day only, because in those years the fourteenths of the moon stand further from the new moons in the heavens.

| Anni Domini | 418 | 419 | 420 | 421 | 422 | 423 | 424 |
|--------------|------|-------|-------|------|------|-------|-------|
| Aur. num. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Luna xiiij. | 5. A | 25.M | 13.A | 2. A | 22.M | 10. A | 30 M |
| (sub-heads) | D. H | D. H | D. H | D. H | D. H | D. H | D. H |
| Plenil. med. | 6.9 | 26.18 | 13.16 | 3.1. | 23.9 | 11.7 | 30.16 |

| Anni Domini | 425 | 426 | 427 | 428 | 429 | 430 | 431 |
|--------------|-------|------|------|-------|------|-------|-------|
| Aur. num. | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Luna xiiij. | 18. A | 7. A | 27.M | 15. A | 4. A | 24.M | 12. A |
| (sub-heads) | D. H | D. H | D. H | D. H | D. H | D. H | D. H |
| Plenil. med. | 18.13 | 7.22 | 28.7 | 15.4 | 4.13 | 24.22 | 12.20 |

| Anno Domini | 432 | 433 | 434 | 435 | 436 |
|--------------|------|-------|------|-------|-------|
| Aur. num. | 15 | 16 | 17 | 18 | 19 |
| Luna xiiij. | 1. A | 21.M | 9. A | 29.M | 17. A |
| (sub-heads) | D. H | D. H | D. H | D. H | D. H |
| Plenil. med. | 1.4 | 21.13 | 9.11 | 29.20 | 16.17 |

Table headings, rendered: *Anni Domini* — Years of the Lord; *Aur. num.* — golden number [aureus numerus]; *Luna xiiij.* — the fourteenth of the moon, with A = April and M = March; *Plenil. med.* — mean full moon [plenilunium medium], set as D. H = day and hour. The third panel's stub-head is printed in the singular, *Anno Domini*, where the first two read *Anni Domini*; its last two column-pairs are ruled but blank.

SCALIGER.

^a THE year of Christ 429 is distant from the Council of Nicaea by a hundred years only, and over that interval there is no anticipation of the moon that the senses could detect. In that year of Christ 429 the paschal term, that is the Dionysian

fourteenth, fell on the fourth of April. Therefore 304 years before that year — that is, in the year 125 — the fourteenth will fall on the fifth of the same month, since in 304 years there occurs one anticipation of the moon [Greek: προέμπτωσις (proémp̄tōsis, "anticipation," the moon's running ahead of the reckoning)]. But in the year of Christ 125, which was the year 872 of Nabonassar, an eclipse of the moon took place on the 17th of Pachon completed — that is, on 4 April, at the 8th hour after midday at Alexandria.

[Margin: a]

CLAVIVS.

^a What is assumed at this point is no truer than the rest. For if you look to the mean motion, which the Church follows rather than the true — as we showed in the *Apologia* — in the year 429 the full moon fell on 5 April, that is, on the 4th day, at hour 13 and somewhat more after midday, as is clear from the table immediately above. Accordingly the fourteenth of the moon, falling on the 4th day, ran ahead of the full moon by nearly a day, as is proper. Again, in the year 125 the mean full moon fell on 6 April — that is, on the 5th day, at hour 12½ after midday. Therefore the fourteenth of the moon, falling on the 5th day, runs ahead of the full moon by nearly a day, which agrees with the Canons. In these years, then, the fourteenth was not the full moon, which is what Scaliger takes for certain.

SCALIGER.

^b LOOK — an eclipse of the moon falling at the beginning of the fourteenth.

[Margin: b]

CLAVIVS.

^b Suppose the eclipse of the moon did fall at the beginning of the fourteenth, that is, at the true full moon. I shall readily grant you what you want, provided you grant me in return what must be so: that the mean full moon then occurred *after* the fourteenth of the moon of the cycle, as we have said. That is enough for us.

SCALIGER.

^c Therefore the fourteenth of the Christians is the full moon.

[Margin: c]

CLAVIVS.

^c How much more correctly you would draw the conclusion this way: therefore the fourteenth of the moon is *sometimes* the full moon. For who would accept this inference — the fourteenth of the moon of the cycle sometimes falls on the full moon, or on the 15th of the moon; therefore the fourteenth is the full moon? What you want would follow only if the fourteenth of the moon always coincided with the full moon; and that has neither been proved nor can be proved.

SCALIGER.

^a AGAIN, in the year of Christ 59 the sun was eclipsed on 30 April, on Pliny's testimony. The paschal term of that year ought to have been on the 14th of April; for 304 years later it fell on the 13th of the same month.

[Margin: a]

CLAVIVS.

^a I say nothing of the fact that nothing at all had yet been settled about the celebration of Easter in the year of Christ 59, since the matter first began to be debated nearly a hundred years later, under Pope Pius. What I do say is this. In the year of Christ 59 the mean full moon — as is clear from the tables we set out in the *Apologia*, Book 2, chapter 6 — fell on 15 April at hour 13½ after midday, which must be assigned to the 16th day. So the paschal term of that year, falling on the 14th day, ran ahead of the full moon by almost two days. Again, in the year 363 — that is, 304 years later — the mean full moon fell on 14 April at hour 14 after midday, which is to say on the 15th day. So the fourteenth of the moon, which in that year fell on the 13th day, once again ran ahead of the full moon by nearly two days. In these years, then, 59 and 363, the fourteenth of the moon did not fall on the full moon, as you maintain, but ran ahead of it by nearly two days.

SCALIGER.

THEREFORE, if the paschal term is the fourteenth of the moon, the full moon fell on 15 April, and from it to the eclipse there are only 14 days — ^b which is absurd.

[Margin: b]

CLAVIVS.

^b See whether it is not more absurd to raise an objection where none holds. If you study the ephemerides more carefully, you will certainly find that it is not at all

rare for 16 days to pass between a new moon and the full moon that follows it, and for the full moon then to stand 14 days from the eclipse, that is, from the new moon that comes next. Nor is that surprising: the reverse often happens as well. Consider — to take an example close at hand — the new moon of February 1596. By the ephemerides of Ioannes Antonius Maginus [Giovanni Antonio Magini] it fell on the 27th day, at hour 15 after midday; the full moon, on the other hand, on 14 March at half an hour before midday. The next new moon after that will be on 28 March, at about hour 8 after midday. Do you not see that the full moon stands nearly 16 days from the new moon before it, but only 14 from the one that follows?

SCALIGER.

^c Therefore the full moon immediately preceding fell towards the end of the fourteenth. The fourteenth of the Christians is the full moon.

[Margin: c]

CLAVIVS.

^c On the contrary, the mean full moon, as was said a little earlier, fell on 15 April at hour 13 after midday. The fourteenth of the moon, therefore, falling on the 14th day, is not the full moon.

SCALIGER.

BUT let it be as Clavius will have it. ^a On this showing there will be no error in the paschal celebration of the year 1598; for, as he himself maintains, the Christian Easter can be celebrated even on the very day of the full moon.

CLAVIVS.

^a I will even help you out. Not only is there no error in the celebration of Easter in the year 1598, since it is celebrated at the mean full moon by the prescription of the Canons: it was Maestlin [Michael Mästlin] and a number of others, who supposed there was an error, who went wrong — as I showed in Book 2, chapter 6, of the *Apologia*.

SCALIGER.

^b WHY, then, does he admit that no remedy can be found for this drawback, because of the uniform series of the epacts, which very often fail to keep pace with the new moons?

[Margin: b]

CLAVIVS.

^b You take this in a different sense from the one in which I said it. I have certainly never said that the Easter of the year 1598 is unlawful. What I did say was that no remedy can be applied without Easter's being celebrated occasionally — though rarely — on the fourteenth of the moon, before the full moon; and that does not apply to the year 1598 at all.

SCALIGER.

FOR if in the year 1598 Easter is to be celebrated at the full moon — and Clavius's new Canon ^c allows that this may be done.

[Margin: c]

CLAVIVS.

^c Say rather that the ancient canon of the Popes, of the Councils, and of those who have written on the right celebration of Easter allows it.

SCALIGER.

^d WHAT need is there, then, to excuse [?] what is perfectly in order?

[Margin: d]

CLAVIVS.

^d Where did I excuse anything? Was it when I demonstrated against Maestlin that it is lawful? But defending is one thing, excusing another.

SCALIGER.

^e CLAVIUS would certainly have served himself better if he had not published the sixth chapter of his second book.

CLAVIVS.

^e Scaliger would certainly have served himself better if he had left that sixth chapter alone, since it contains nothing whatever but the teaching of the Fathers, of the councils, and of the authors on the computus, and besides these the unbroken practice of the Catholic Church in celebrating Easter.

[Margin: e]

SCALIGER.

IN it he has said a great deal ^a that he will convince no one of who has even a little understanding of these matters.

[Margin: a]

CLAVIVS.

^a But I have already convinced of these things every kingdom and province that follows the authority of the Roman Pontiff. Nor has any one of those [recte: *qui*, printed *quæ*] who are versed in the Canons of the Fathers, in the councils, and in the ecclesiastical computus dared to reject any part of them — and Scaliger himself, who brings nothing forward against them, is proof enough of that.

SCALIGER.

THEREFORE, however justly he may have criticized Maestlin on other points, on this one he does him an injustice when he grows angry with him for having supposed that the fourteenth of the Christians is the full moon.

CLAVIVS.

^b Scaliger would not acknowledge this as an injustice were it not that, through their partnership in the error, the criticism of Maestlin reaches him as well. And in this matter I am not so much doing Maestlin an injustice as vindicating the Gregorian Calendar from the injustice he does it. For he, like Scaliger, maintains — against the practice of the Church and the decrees of the Fathers — that the fourteenth of the moon is the full moon, and consequently that Easter cannot be celebrated at the full moon.

SCALIGER.

BUT let us hear Clavius himself, in the fourth chapter of the same book: *The new moons of the golden number, around the year of the Lord 500 [?], fell later than those in the heavens, and will therefore be better suited to the use of the Church.* Therefore, most learned Clavius, the fourteenth counted from the epact was the fifteenth from the new moon, and so the full moon. I take you yourself as judge: whether everything you said in the whole of chapter six is not far from the truth, and whether you have not wrongly accused Maestlin.

CLAVIVS.

^c Turn yourself this way and that as you please, most learned Scaliger: you will never make the fourteenth be the full moon. I have said many times already that we postponed the new moons deliberately, so as to guard against the fourteenth of the moon running two days ahead of the full moon. That is the reason why the fourteenth of the moon sometimes coincides with the full moon, although for the most part it runs ahead of it. What sort of conclusion, then, is this of yours — the new moons have been postponed, therefore the fourteenth of the moon is a fifteenth? For if it ever happens that the fourteenth is a fifteenth, it happens by accident, on account of the epacts or the golden number, and not by design, nor because it has been so ordained. Listen to Bede [Bede], Book 5 of the *Ecclesiastical History of the English People*, chapter 22: *If, then, it could be brought about*, he says, *that the Lord's day always fell on the fifteenth day of the first month — that is, on Luna xv. — we could always celebrate Easter at one and the same time*. Here I take you yourself for arbiter, provided you will show yourself fair: whether everything I said in the whole of chapter 6 is not true, and whether I have not deservedly accused Maestlin — seeing that it all agrees with the Canons and with the writers on the computus, whom Maestlin opposes.

SCALIGER.

[Margin: a]

^a LET every one of the most ancient computus-writers be examined — Greek, Latin, Syriac, Arabic. *In all of them the Paschal term is the full moon.*

CLAVIVS.

^a I have in fact examined every one I could lay hands on, and I find that they all teach this: that Easter is to be celebrated after Luna xiiij. of the lunar cycle, whether that day is the full moon, or immediately precedes or follows it. Their one concern is that it should not be celebrated before the full moon, so far as that can be managed. And if any writers on the computus do report — as they seldom do — that the Paschal term is the full moon, they say so because Luna xiiij. is the beginning of the full moon, even though the fourteenth day is counted from the new moon.

SCALIGER.

[Margin: b]

^b *Argyros [Isaac Argyros] calls the Paschal term τὸ ἰϋδαϊκὸν πάσχα [Greek: to ioudaikon pascha, "the Jewish Passover"; the ou is set as a single ligature sort] κ πανσεληνιακὴν συζυγίαν [Greek: kai panselēniakēn syzygian, "and the full-moon syzygy"; terminal -ην set as a ligature sort. The sort standing before πανσεληνιακὴν is the κ kai-compendium (kappa-body with a descending tail and a trailing raised comma), expansion καί].*

CLAVIVS.

^b *Argyros puts it well enough, provided he has a good interpreter. He calls the Paschal term the full moon because the fourteenth of the moon differs little from the full moon; or else because in his own day (just as in ours, before the Calendar was corrected) Luna xiiij. always came *after* the full moon — for between the Council and his time the moon had run ahead of its place by nearly three days.*

SCALIGER.

[Margin: c]

^c *Christ rose after the full moon, namely on the sixteenth day of Nisan.*

CLAVIVS.

^c *I am surprised this slipped from Scaliger's pen, for it contains an obvious error — though it does not bear on the question. If Christ was crucified at the full moon itself (as Dionysius the Areopagite testifies, and as everyone agrees), that is, on Luna xv., how can it be that, having died on the fifteenth of the moon, he rose on the sixteenth? Unless perhaps Scaliger supposes that Christ rose the day after he died — that is, on the Sabbath.*

SCALIGER.

[Margin: d]

^d *That is why the Sunday after the full moon is prescribed for celebrating πάσχα ἀναστάσιμον [Greek: pascha anastasimon, "the Paschal feast of the Resurrection"; στ set as a ligature sort].*

CLAVIVS.

^d *You take it wrongly, Scaliger. Easter is prescribed to be celebrated on the Sunday after Luna xiiij., not after the full moon. That is plain enough from the decrees of Pius, Victor, and the other Popes, and from those of the councils, and I set it out in the *Apologia*.*

SCALIGER.

[Margin: a]

^a *For the τεσσαρεσκαδεκα[?]ται [Greek: tessareskaideka[?]tai, "Quartodecimans"; the syllable after -δεκα- is set as a single circumflexed ligature sort (apparently τῖ) that I cannot resolve] erred in two ways: both in celebrating at the full moon, and in not celebrating on a Sunday — that is, whenever the full moon fell on another weekday.*

CLAVIVS.

^a The Quartodecimans erred because they celebrated Easter on Luna xiiij., not at the full moon — except when the Luna xiiij. indicated by the cycle happened to coincide with the full moon, which around the time of the Council of Nicaea happened very rarely indeed. Had they celebrated Easter at the full moon, or on Luna xv. as Scaliger will have it, they would have been called πανσέληνῖται [Greek: panselēnitai, "full-mooners"; printed with an acute on the ε and a circumflex on the ι] — that is, *pleniluniani* — or Quintodecimans; yet no such name is found anywhere.

SCALIGER.

[Margin: b]

^b *The Christians' fourteenth, therefore, is the full moon, whatever the learned Clavius may urge against it. It will accordingly be the fifteenth from the new moon — on the testimony of Clavius himself and of Lilius. What I assert is this: that the fifteenth from the new moon which the Church calls the fourteenth is at one time a fifteenth from the new moon and at another a fourteenth; and this because of the even advance of the epacts by xi. — which Clavius too admits in his own Apologia.*

CLAVIVS.

^b He comes round to the same point, but it has been refuted sufficiently above. That the fourteenth of the cycle is sometimes a fifteenth from the true new moon in the heavens happens because the cycle's new moons were postponed — and it does not happen so often, since for the most part the fourteenth runs only one day ahead of the full moon.

SCALIGER.

[Margin: c]

^c *But that fault ought to have been cured — that is, the addition of eleven should not always have been followed in finding the epact.*

CLAVIVS.

^c As though it were not the part of a wise physician to leave a lighter ill alone when it cannot be cured without a graver one! Had we chosen to cure that fault, and not always to follow the addition of eleven in finding the epact, we should have thrown everything into confusion. For by the Church's practice the rules put before the people must be easy and uniform, so that they do not mislead those who have to use them.

SCALIGER.

Let us suppose, as we did in the case of the solar period, that the Lilian form had held good from the beginning of the years of Christ; and, starting from the year of Christ 1577, which is the Jewish year 5337, let us set up a nineteen-year lunar cycle with the Jewish new moons added — those new moons whose full moons do not fall before 21 March Lilian. Against these new moons the weekday is set out in the Jewish manner, and it shifts whenever the hours that follow have reached 18. We have also added the Lilian Dominical letter, to mark the epoch of the new moon in the Calendar, as you have it in the table set out below.

[Margin: a]

| Lineæ
Cycli. | Anni
Christi
. | Litera
Dom.
Liliana. | Neomeniæ
Iudaicæ.
Feria. | H
o
r
æ
. | Scrup
.
1080. | Menses
Liliani. | Epactæ
Neomenia
rū |
|-----------------|----------------------|----------------------------|--------------------------------|-----------------------|---------------------|--------------------|--------------------------|
| 1 | 1577 | B | 3. | 1
3. | 256 | 29 M | 2 |
| 2 | 1578 | A | 7. | 2
2. | 52 | 19 M | 12 |
| 3 | 1579 | G | 5. | 6. | 928 | 8 M | 23 |
| 4 | 1580 | FE | 4. | 4. | 437 | 26 M | 5 |
| 5 | 1581 | D | 1. | 1
3. | 233 | 15 M | 16 |
| 6 | 1582 | C | 7. | 1
0. | 822 | 3 A | 26 |

| Lineæ
Cycli. | Anni
Christi
. | Litera
Dom.
Liliana. | Neomeniæ
Iudaicæ.
Feria. | H
o
r
æ
. | Scrup
. 1080. | Menses
Liliani. | Epactæ
Neomenia
rū |
|-----------------|----------------------|----------------------------|--------------------------------|-----------------------|------------------|--------------------|--------------------------|
| 7 | 1583 | B | 4. | 1
9. | 618 | 24 M | 7 |
| 8 | 1584 | AG | 2. | 4. | 414 | 12 M | 19 |
| 9 | 1585 | F | 1. | 1. | 1003 | 31 M | 29 |
| 10 | 1586 | E | 5. | 1
0. | 694 | 20 M | 11 |
| 11 | 1587 | D | 2. | 1
9. | 595 | 10 M | 21 |
| 12 | 1588 | CB | 1. | 1
7. | 104 | 27 M | 4 |
| 13 | 1589 | A | 6. | 1. | 980 | 17 M | 14 |
| 14 | 1590 | G | 4. | 2
3. | 489 | 5 A | 24 |
| 15 | 1591 | F | 2. | 8. | 285 | 25 M | 6 |
| 16 | 1592 | ED | 6. | 1
7. | 81 | 13 M | 18 |
| 17 | 1593 | C | 5. | 1
4. | 670 | 1 A | 28 |
| 18 | 1594 | B | 2. | 2
3. | 466 | 22 M | 9 |
| 19 | 1595 | A | 7. | 8. | 262 | 11 M | 20 |

Column headings, translated: *Lineæ Cycli* = lines of the cycle; *Anni Christi* = years of Christ; *Litera Dom. Liliana* = Lilian Dominical letter; *Neomeniæ Iudaicæ* = the Jewish new moon, given as *Feria* (weekday), *Horæ* (hours), and *Scrup. 1080* (scruples, 1080ths of an hour); *Menses Liliani* = the Lilian months; *Epactæ Neomeniarū* = epacts of the new moons.

CLAVIVS.

^a What have the Jews to do with Scaliger? Do not get involved with the Jews, my dear Joseph. They are always devising tricks and deceptions. Believe me, they will

throw dust in your eyes, and those Jewish new moons will drive you into error. You will feel it soon enough, when you see that your table is faulty on that account and falls apart.

SCALIGER.

In this table you have, first, the line of the years of the golden number, from the year of Christ 1577 to the year 1595. Next comes the Lilian Dominical letter. In the fourth place is the Jewish new moon, which is always that of Nisan, except in years 3 and 11, in which Adar is taken for Nisan, because its full moon falls after xx. March Lilian. The first number of the Jewish new moon is the weekday; the second, the hours of the moon's mean motion; the third, the remainder in scruples of 1080. An example. In the first year of the cycle — that is, in the year of Christ 1577 — the new moon was 3. 13. 256. The first number shows that the new moon occurred on the third weekday; and since the Dominical letter is B, the third weekday will be the letter D. Accordingly the new moon of the Jewish Nisan falls on 29 March Lilian, at hour 13. 256 from the beginning of the night that precedes the stated day, the 29th. But when the hours have reached 18 or beyond, the weekday is then increased by one. For example, in the second year of the cycle the new moon was 7. 22. 52. Because the hours ran beyond 17. 1079, Feria 7 must therefore be taken as the first weekday — that is, the letter A instead of G; and so always. In the first year of the cycle we see the truth of Lilius's own warning, that the Dionysian epacts, which he reduced by ten, mark the new moons one day late. For the Dionysian epact xj., which today is 1., indicates the new moon one day late, whereas by the true epact the new moon is ij. And therefore — the point we have already touched on — the full moon falls on the Dionysian, or Lilian, fourteenth.

[Margin: a]

CLAVIVS.

^a On this point, my dear Scaliger, I cannot agree with you, however much I should like to. Luna xiiij. of epact j. always falls on 12 April; and the mean full moon in the year 1577 (supposing, as you wish, that the 10 days had already been removed) fell on 12 April at hour 10 after noon — which is day 13. So our fourteenth will genuinely be a fourteenth, not a fifteenth, as you wrongly maintain. Your own fourteenth, of epact ij., falls on the 11th day; and so, if the Lord's day followed, you would be celebrating Easter *before* the full moon — which is absurd even on your own judgment. And do not tell me that it ought to be celebrated after the fifteenth and not after the fourteenth. That this is false I have shown already, and shall show again later at greater length. Then grant that

it is true: on that reckoning, if the day after Luna xv. — that is, 13 April — were a Sunday, you would be celebrating Easter at the full moon, which is the very thing you refuse. You see, then, that our epacts indicate the new moons more correctly for the Church's use than yours do, and that your table of Jewish new moons agrees neither with itself nor with you.

SCALIGER.

But in the second year the epact of the new moon is the same as the Dionysian, as the table shows. The same verdict applies to the third epact. In both epacts, therefore — xij. as much as xxij. — the fourteenth of the moon will not be the full moon. And if in the second and third years of the cycle it had turned out that the Lord's day fell on 2 April and on 22 March, Easter would have been celebrated at the full moon,^b contrary to the Canons.

CLAVIVS.

[Margin: b]

^b You are stuck in the same mud, my dear Joseph. It has been said many times over that by the Canons Easter can perfectly properly be celebrated at the full moon. Produce a single Canon that forbids Easter to be celebrated at the full moon, and you have won.

SCALIGER.

^c *And that is precisely why Clavius rightly excuses the error of the year 1598. For in that year Easter will be celebrated at the full moon, because the epact of that year marks the new moon, and consequently the fourteenth reckoned from the epact is not the full moon. But here Clavius is making excuses for the uniform epacts, by which the new moons themselves cannot always be marked.*

CLAVIVS.

^c In fact I have never excused the Easter of 1598, since I acknowledge no error in it. What I proved, against Maestlin and the other detractors, is that it will be lawfully celebrated on 22 March. So I wonder what put it into your head to say that I was excusing what you had seen me prove. Were you so short of arguments that you had to scrape these together?

And yet you are not unaware how far real coin stands from lupine-seeds.

[Horace, *Epistles* I.7.23]

SCALIGER.

^a *And in doing so he plainly shows that the Dionysian fourteenth is the full moon — the name by which the Greeks call it, πανσέληνον [Greek: panselēnon, "full moon"].*

CLAVIVS.

^a I have said it many times already; but since you make no end of contradicting, it has to be said more often still. We postponed the new moons not so that the fourteenth should fall on the full moon, but so that it should not run two days ahead of it. That fault occurs very frequently in Scaliger's epacts, as I shall show later on.

SCALIGER.

^b *Why, then, does he censure Maestlin for having said that the Christians' fourteenth is the full moon, and that Easter is celebrated contrary to the Canons whenever it is celebrated at the full moon? For that is certainly the force of it.*

CLAVIVS.

^b Please, Joseph, do not take up Maestlin's defence, or the just censure of the case will fall on his advocate. I have said elsewhere already that I was right to censure Maestlin, because he was trying to overturn the canons.

SCALIGER.

[Margin: c]

^c *It is something new, to deny that Easter is not to be celebrated at the full moon.*

CLAVIVS.

^c Consider rather whether it is not new and rash to deny that Easter may be celebrated at the full moon — when the writers on the computus affirm that this is entirely in accordance with the canons (as I showed in the *Apologia*), and the Church has celebrated it so very often. And so that you may stop pestering me by harping on the same point, and so that everyone may see how strangely you deceive yourself here, setting yourself against the canons, against the decrees of the Popes and of the councils, and against the writers on the ecclesiastical computus, I shall make plain what I have just said.

First, then, St Pius, pope and martyr, the tenth from St Peter, laid down around the year of the Lord 159 — as we have it in *de Conser.[?] distinc. 3. cap.* Nosse [Gratian, *De consecratione*, dist. 3, c. Nosse] — that the Lord's Easter is to be celebrated on a Sunday. And it is clear enough that he meant the Sunday which follows Luna xiiij., since he prescribes this on account of the Asians, who used to celebrate Easter on Luna xiiij. itself, without waiting for the Sunday. St Victor, pope and martyr, the fourteenth from St Peter, laid down the same thing more plainly around the year of the Lord 198. His words, in the letter to Theophilus, bishop of Caesarea, which is found at *de Consecr. distinct. 3. cap.* Celebritatem, are these: *That the feast of the holy Pasch ought to be kept on the Lord's day our predecessors have already laid down, and we command that it be solemnly celebrated on that same day; for it is not fitting that the members should differ from the head, or act otherwise. And let that same festival be celebrated from the fourteenth of the moon of the first month up to the twenty-first of the same month.* Next, the same was confirmed and ratified by various councils, and especially by the first council after the Apostles, which was held at Caesarea in Palestine by a good many bishops at the urging of Pope St Victor, and over which Theophilus, bishop of that city, presided — as we read in Eusebius, *Ecclesiastical History* book 5, chapter 24. For there Theophilus, in the synodal letter, states that it was laid down in that council that Easter should be celebrated from Luna xiiij. up to Luna xxj. The same was afterwards confirmed and renewed by the common consent of all in that most famous Council of Nicaea, by the 318 Fathers. I pass over many other councils, so as not to be long. I come to the testimonies of the holy Fathers. The Venerable Bede teaches the same in several places, as I reported in the *Apologia*. Indeed in book 4, chapter 5 of the *Ecclesiastical History* he records that it was decreed in a certain English council, in the king's presence, that Easter should be celebrated on the Sunday after Luna xiiij. of the first month. And it was not merely decreed then: it was also observed in all the centuries that followed. St Isidore [Isidore of Seville], who flourished around the year of the Lord 630, shows the very same in *de Eccles. off.* book 1, chapter 31. Rabanus [Hrabanus Maurus] too, archbishop of Mainz, who was active around the year 855, in *de Instit. cler.* book 2, chapter 39; and Ru-

Rupert, abbot of Deutz [Rupert of Deutz], who flourished around the year 1124, in *de Diuin. off. cap. 27.* of book 6 — all of them confirming the same thing — enumerate every one of the Paschal terms that we see observed in the Church today, and they assert that Easter is to be celebrated on one of the seven days running from Luna xv. inclusive to xxj. inclusive. Furthermore, Guilielmus Durantus [Guillaume Durand], in the *Rationale Diuinorum officiorum* book 8, chapter 12, carefully sets out all 29 Paschal Lunæ xiiij., teaching more than once

— indeed repeatedly — that the first Paschal Luna xiiij. falls on the twelfth day before the Kalends of April and the last on the fourteenth before the Kalends of May, and that Easter must always be celebrated after them. In book 6, chapter 75 as well he states that by the Lord's command Easter is to be celebrated at the full moon, that is, on one of the seven days of the third week. Finally, John of Sacrobosco teaches the same in plain words in his *Computus Ecclesiasticus*; so does Paul of Middelburg, bishop of Fossombrone, in many places of his *Paulina*; so does Johannes Stoeffler [Johannes Stöffler] in his *Calendarium Romanum*; and a great many others besides. Anyone who cares to may read Marcellus Francolinus in his book *de tempore Horarum Canon.*, who in various passages brings forward a great many testimonies proving the same point.

Now observe how complete the agreement among these writers is. In none of them will you find that Easter is to be celebrated on the Sunday after Luna xv. of the first month — always after Luna xiiij. And will anyone really suppose that Scaliger by himself has seen further than all these men together, who from the first beginnings of the infant Church down to our own day preserved with the utmost care a doctrine on the celebration of Easter handed down, as it were, from the Apostles hand to hand? As for Campanus — the one writer on the computus, out of them all, who calls the Paschal fourteenth the full moon — he does so because the end of Luna xiiij., when the Jews were commanded to eat the lamb, is the beginning of Luna xv., that is, of the full moon. The proof is that he then plainly attests and teaches that Easter is to be celebrated on the Sunday after Luna xiiij. counted from the new moon.

BUT in fact all the authorities I have cited are, quite clearly, to be understood of the Luna xiiij. counted from the new moon of the cycle. This is established from the golden number entered in the calendars by Dionysius the Abbot [Dionysius Exiguus], and from the Paschal terms fixed there, all of which fall on the Luna xiiij. reckoned from the golden number of the year proposed. Thus between the golden number xvj., which was set against the eighth day of March, and the 21st of the same month, on which the fourteenth of that golden number falls, you see that 12 days lie between; and that from the 8th inclusive to the 21st inclusive 14 days are counted. The same holds for the remaining golden numbers. Who, then, most ingenious Joseph, has given you the authority to prescribe — by a new custom and practice, which not even the Pope himself would venture to introduce — that 15 days be counted from the new moon of the cycle to the Paschal term? That this runs against the canons, against the decrees of the Popes, and against the doctrine of the Fathers is proved most manifestly by this: since from the Council of Nicaea down to the present time the first Paschal new moon

has been assigned to the eighth day of March, as the unbroken practice of the Church shows, then if Easter had to be celebrated after the Luna xv. reckoned from the new moon, as you would have it, it could never have been celebrated on 22 March — for that day is the fifteenth from that new moon. Nor can you say that the new moon in question should be placed on 7 March: no one ever asserted this, and no golden number was ever attached to the seventh day so as to mark a new moon there. Again, since the last Paschal new moon in the Church's usage has always fallen on 5 April, if fifteen days were to be counted from it, the Paschal term itself would have to be fixed on 19 April, and consequently, if that were a Sunday, Easter would have to be moved to 26 April — which is unheard of and new.

You see, then, that when Luna xiiij. anticipates the full moon and falls on a Sunday, Easter is celebrated by the Church at the full moon itself; and you will find that this was never forbidden — on the contrary, that it was done very often from the Council of Nicaea down to the Gregorian correction. You could easily have learned this too from the old table of movable feasts. For since that table directs Easter to be celebrated on the Dominical letter next following the golden number that marks Luna xiiij., or the Jews' Passover — who does not see that, if the Dominical letter immediately follows the golden number (which happens not infrequently), Easter is celebrated on Luna xv., that is, at the full moon? And so that not the slightest scruple may remain in anyone's mind, and that the whole matter may be clearer than daylight, I have gathered in a table, which I shall append shortly, 175 years in which Easter was celebrated immediately after the Luna xiiij. counted from the new moon. Among these you will find a number of years in which Easter preceded the full moon, especially around the time of the Council of Nicaea — namely the years 326. 330. 346. 350. 370. 394. 441. 475. 495. — as I also pointed out in the *Apologia* book 2, chapter 6. Nor did the Church trouble herself greatly about errors of this kind, whatever they were, although she saw them. Her one precaution was that the canon of the Council should be observed uniformly the world over, the canon by which Easter is prescribed to be celebrated after Luna xiiij. [so printed], even if now and then — though rarely, on account of the arrangement of the cycle — it was kept before the full moon.

From this it follows that the cycle must be so ordered in the Calendar that, so far as it can be managed, the Paschal Lunæ xiiij. anticipate the full moon by one day only, and never by two, except very rarely (since no cycle can avoid it altogether). This our cycle of epacts achieves with the greatest precision, since under it Easter is celebrated before the mean full moon scarcely once or twice in 3000 years — something your Calendar, as we shall say below, is quite unable to achieve, since

your Paschal Lunæ xiiij. very often run ahead of the full moon by two days, and even by three.

BUT so as not to put off any longer what I promised, here for you are the 175 years in which Easter was celebrated on Luna xv. — so that you may see for yourself how rashly you have attacked, with such violence, the constitution of our Paschal reckoning, which you could not shake; and how groundlessly you have argued that it is contrary to the canons, when it rests on the canons above all. And in case you should have doubts about the reliability of this table, it has been put together out of the great Dionysian cycle of 532 years and out of the old table of movable feasts. I have also set beside those same years the corresponding golden numbers and Dominical letters, so that it may be plain to anyone that Easter was indeed celebrated on Luna xv. in accordance with the Canons.

Further, the letter A stands for April, M for March.

Table of the 175 years in which Easter was celebrated on Luna xv. (continues onto the following page). Column heads as printed: *Anni Dom.* (Years of the Lord) | *Aur. Num.* (Golden Number) | *Litera Dom.* (Dominical Letter) | *Pascha.* (Easter). The page sets two such panels side by side; A = April, M = March, per the note on the preceding page. Rules divide the rows into groups of four.

| Anni Dom. | Aur. Num. | Litera Dom. | Pasch a. | Anni Dom. | Aur. Num. | Litera Dom. | Pasch a. |
|-----------|-----------|-------------|----------|-----------|-----------|-------------|----------|
| 326 | 4 | B | 3. A | 330 | 8 | D | 19. A |
| 340 | 18 | FE | 30. M | 346 | 5 | E | 23. M |
| 350 | 9 | G | 8. A | 370 | 10 | C | 28. M |
| 374 | 14 | E | 13. A | 394 | 15 | A | 2. A |
| 398 | 19 | C | 18. A | 401 | 3 | F | 14. A |
| 414 | 16 | D | 22. M | 425 | 8 | D | 19. A |
| 441 | 5 | E | 23. M | 445 | 9 | G | 8. A |
| 465 | 10 | C | 28. M | 469 | 14 | E | 18. A |
| 475 | 1 | E | 6. A | 489 | 15 | A | 2. A |
| 493 | 19 | C | 18. A | 495 | 2 | A | 26. M |
| 496 | 3 | GF | 14. A | 499 | 6 | C | 11. A |
| 509 | 16 | D | 22. M | 519 | 7 | F | 31. M |
| 520 | 8 | ED | 19. A | 523 | 1 | A | 16. A |
| 536 | 5 | FE | 23. M | 540 | 9 | AG | 8. A |

| Anni
Dom. | Aur.
Num. | Litera
Dom. | Pasch
a. | Anni
Dom. | Aur.
Num. | Litera
Dom. | Pasch
a. |
|--------------|--------------|----------------|-------------|--------------|--------------|----------------|-------------|
| 543 | 12 | D | 5. A | 560 | 10 | DC | 28. M |
| 563 | 13 | G | 25. M | 564 | 14 | FE | 13. A |
| 567 | 17 | B | 10. A | 570 | 1 | E | 6. A |
| 584 | 15 | BA | 2. A | 587 | 18 | E | 30. M |
| 588 | 19 | DC | 18. A | 590 | 2 | A | 26. M |
| 594 | 6 | C | 11. A | 604 | 16 | ED | 22. M |
| 614 | 7 | F | 31. M | 618 | 11 | A | 16. A |
| 638 | 12 | D | 5. A | 658 | 13 | G | 25. M |
| 662 | 17 | B | 10. A | 665 | 1 | E | 6. A |
| 682 | 18 | E | 30. M | 685 | 2 | A | 26. M |
| 689 | 6 | C | 11. A | 709 | 7 | F | 31. M |
| 713 | 11 | A | 16. A | 733 | 12 | D | 5. A |
| 743 | 3 | F | 14. A | 753 | 13 | G | 25. M |
| 757 | 17 | B | 10. A | 760 | 1 | FE | 6. A |
| 763 | 4 | B | 3. A | 767 | 8 | D | 19. A |
| 777 | 18 | E | 30. M | 780 | 2 | BA | 26. M |
| 783 | 5 | E | 23. M | 784 | 6 | DC | 11. A |
| 787 | 9 | G | 8. A | 804 | 7 | GF | 31. M |
| 807 | 10 | C | 28. M | 808 | 11 | BA | 16. A |
| 811 | 14 | E | 13. A | 828 | 12 | ED | 5. A |
| 831 | 15 | A | 2. A | 835 | 19 | C | 18. A |
| 838 | 3 | F | 14. A | 848 | 13 | AG | 25. M |
| 851 | 16 | D | 22. M | 852 | 17 | CB | 10. A |
| 858 | 4 | B | 3. A | 862 | 8 | D | 19. A |
| 872 | 18 | FE | 30. M | 878 | 5 | E | 23. M |
| 882 | 9 | G | 8. A | 902 | 10 | C | 28. M |
| 906 | 14 | E | 13. A | 926 | 15 | A | 2. A |
| 930 | 19 | C | 18. A | 933 | 3 | F | 14. A |
| 946 | 16 | D | 22. M | 953 | 4 | B | 3. A |
| 957 | 8 | D | 19. A | 973 | 5 | E | 23. M |

| Anni Dom. | Aur. Num. | Litera Dom. | Pasch a. | Anni Dom. | Aur. Num. | Litera Dom. | Pasch a. |
|-----------|-----------|-------------|----------|-----------|-----------|-------------|----------|
| 977 | 9 | G | 8. A | 997 | 10 | C | 28. M |
| 1001 | 14 | E | 13. A | 1007 | 1 | E | 6. A |
| 1021 | 15 | A | 2. A | 1025 | 19 | C | 18. A |
| 1027 | 2 | A | 26. M | 1028 | 3 | GF | 14. A |
| 1031 | 6 | C | 11. A | 1041 | 16 | D | 22. M |
| 1048 | 4 | CB | 3. A | 1051 | 7 | F | 31. M |
| 1052 | 8 | ED | 19. A | 1055 | 11 | A | 16. A |
| 1068 | 5 | FE | 23. M | 1072 | 9 | AG | 8. A |
| 1075 | 12 | D | 5. A | 1092 | 10 | DC | 28. M |
| 1095 | 13 | G | 25. M | 1096 | 14 | FE | 13. A |
| 1099 | 17 | B | 10. A | 1102 | 1 | E | 6. A |
| 1116 | 15 | BA | 2. A | 1119 | 18 | E | 30. M |
| 1120 | 19 | DC | 18. A | 1122 | 2 | A | 26. M |
| 1126 | 6 | C | 11. A | 1136 | 16 | ED | 22. M |
| 1146 | 7 | F | 31. M | 1150 | 11 | A | 16. A |
| 1170 | 12 | D | 5. A | 1190 | 13 | G | 25. M |

(Table of the 175 years, concluded. Same column heads as on the preceding page.)

| Anni Dom. | Aur. Num. | Litera Dom. | Pasch a. | Anni Dom. | Aur. Num. | Litera Dom. | Pasch a. |
|-----------|-----------|-------------|----------|-----------|-----------|-------------|----------|
| 1194 | 17 | B | 10. A | 1197 | 1 | E | 6. A |
| 1214 | 18 | E | 30. M | 1217 | 2 | A | 26. M |
| 1221 | 6 | C | 11. A | 1241 | 7 | F | 31. M |
| 1245 | 11 | A | 16. A | 1265 | 12 | D | 5. A |
| 1275 | 3 | F | 14. A | 1285 | 13 | G | 25. M |
| 1289 | 17 | B | 10. A | 1292 | 1 | FE | 6. A |
| 1295 | 4 | B | 3. A | 1299 | 8 | D | 19. A |
| 1309 | 18 | E | 30. M | 1312 | 2 | BA | 26. M |
| 1315 | 5 | E | 23. M | 1316 | 6 | DC | 11. A |
| 1319 | 9 | G | 8. A | 1336 | 7 | GF | 31. M |
| 1339 | 10 | C | 28. M | 1340 | 11 | BA | 16. A |

| Anni
Dom. | Aur.
Num. | Litera
Dom. | Pasch
a. | Anni
Dom. | Aur.
Num. | Litera
Dom. | Pasch
a. |
|--------------|--------------|----------------|-------------|--------------|--------------|----------------|-------------|
| 1343 | 14 | E | 13. A | 1360 | 12 | ED | 5. A |
| 1363 | 15 | A | 2. A | 1367 | 19 | C | 18. A |
| 1370 | 3 | F | 14. A | 1380 | 13 | AG | 25. M |
| 1383 | 16 | D | 22. M | 1384 | 17 | CB | 10. A |
| 1390 | 4 | B | 3. A | 1394 | 8 | D | 19. A |
| 1404 | 18 | FE | 30. M | 1410 | 5 | E | 23. M |
| 1414 | 9 | G | 8. A | 1434 | 10 | C | 28. M |
| 1438 | 14 | E | 13. A | 1458 | 15 | A | 2. A |
| 1462 | 19 | C | 18. A | 1465 | 3 | F | 14. A |
| 1478 | 16 | D | 22. M | 1485 | 4 | B | 3. A |
| 1489 | 8 | D | 19. A | 1505 | 5 | E | 23. M |
| 1509 | 9 | G | 8. A | 1529 | 10 | C | 28. M |
| 1533 | 14 | E | 13. A | 1539 | 1 | E | 6. A |
| 1553 | 15 | A | 2. A | 1557 | 19 | C | 18. A |
| 1559 | 2 | A | 26. M | 1560 | 3 | GF | 14. A |
| 1563 | 6 | C | 11. A | 1573 | 16 | D | 22. M |
| 1580 | 4 | CB | 3. A | | | | |

NOR indeed was this peculiar to the Latin, or Western, Church — that it should celebrate Easter immediately after the Luna xiiij. reckoned from the new moon, whether before the correction of the Calendar or after it, provided the day next following is a Sunday. The Eastern Church has kept, and still keeps, the very same custom in perpetuity. This is clear from the tables for finding the movable feasts that the Easterns use, and which Ignatius, Patriarch of Antioch, recently brought to Rome and submitted for inspection to the commission on the Calendar.

Moreover, that the same was done before the Council of Nicaea I can prove on your own testimony, since on the authority of Bishop Hippolytus you rightly affirm that in the year of Christ 222 — which was the first year of the Emperor Alexander, with cycle of the Sun 7 and Dominical letter F, with golden number 14 — Luna xiiij. fell on 13 April, which was a Saturday, and that Easter was celebrated on the following day, the 14th, that is, at the full moon; for in that year the full moon occurred on the 13th, more than 5 hours after noon, and so had to be assigned to the following day, the 14th. This holds all the more since you yourself admit that all this agrees entirely with the canon. And if that is so, then

Easter is not celebrated at the full moon contrary to the canons, as you assert in this *Elenchus* of yours — or else you are certainly inconsistent with yourself.

What of this, too: that in this very year 1595, in which I am writing, Easter was celebrated at the full moon itself, and will be celebrated in the same way again in the years 1599 and 1609? Will you find fault with these cases as well — which lay right before your eyes, and which you nevertheless left untouched? Come now: who does not see that, if Easter could not be celebrated on a Sunday falling at the full moon, that is, on Luna xv., it would have to be celebrated on Luna xxij.? And indeed that if 19 April were a Sunday falling on the Paschal full moon, Easter would have to be deferred both to Luna xxij. and to 26 April? Yet all this is contrary to the Canons, as is plain from what I have said and as I argued at greater length in the *Apologia*. You are therefore wrong by the whole breadth of the sky when you assert that Easter cannot be celebrated at the full moon.

SCALIGER.

[Margin: a]

AGAIN, in year iiij. of the cycle the Epact of the new moon is v., which in the Dionysian and Lillian form is iiij., one day later. ^aTherefore the Lillian — or Dionysian — fourteenth in year iiij. of the cycle is the full moon, since the full moon is the fifteenth from Epact v. Furthermore, you see here that for finding the next Epact it is sometimes necessary to add only 10 to the preceding Epact, whereas the common Epacts advance by a constant addition of xj.: as in the years 2. 6. 9. 11. 14. 17., whose Epacts were propagated by adding 10 to the preceding Epacts; but in the years 4. 8. 15., by adding xij. to the preceding Epacts.

CLAVIVS.

^a AND YET, if you examine the matter more carefully, you will find that our fourteenth rather *precedes* the mean full moon. For our fourteenth falls on 9 April, whereas the full moon falls on that same 9 April at hour 1½ after noon, which is the 10th of April. And you will find, again, that your own fourteenth, which falls on 8 April, runs ahead of the full moon by nearly two days — which is a very grave fault indeed.

SCALIGER.

[Margin: b]

AS FOR the Epact of year xij. having been created by adding xij. to the preceding one — ^bthat came about because of the bissextile day, whose intervention often

defeats the reliability of uniform Epacts. This much alone is established: that this Epact — that of year xij., namely — is produced in due order and correctly by the addition of xij.

CLAVIVS.

[Margin: b]

^b HE IS plainly wrong. For if we wanted to take account of the bissextile day in placing the Epacts in the Calendar, we would confuse the civil year and the ecclesiastical year in an extraordinary way. That is precisely why not even Scaliger himself admitted this manner of placing the Epacts into his own Calendar.

SCALIGER.

[Margin: c]

SINCE, then, matters stand thus, we see ^chow dangerous the method of uniform Epacts is for the celebration of Easter;

CLAVIVS.

ALL that follows from this is what we freely admit anyway: that no cycle of uniform Epacts can be found for the celebration of Easter which avoids error on every side. One must therefore adopt above all the cycle that contains the fewest errors — and we showed in the *Apologia* that ours is such a cycle, as the calculation that follows will make plain.

SCALIGER.

[Margin: d]

^dAND from it arose that most shameful error of the year 1598., which I cannot think why they so confidently confess and conceal at one and the same time.

CLAVIVS.

THIS really is not to be borne. He calls "most shameful" an error that is no error at all, and he charges us with confessing and dissembling at once in a matter which we maintain was rightly done. I have declared before, and I declare now once again, that the Easter of 1598 will be celebrated correctly and according to the Canons — so that everyone may understand that there is no confession and no dissembling underneath it.

SCALIGER.

BUT not even so will the Epacts always remain as they have been set out in the table. For after a number of cycles some of them will be altered and dislodged from their seats, before the rest have moved beyond their own limits. I put this forward in order to point out [Margin: c] the doubtful reliability of uniform Epacts, ^cnot to condemn their use — since the year we use is civil, not astronomical; and for that very reason the Epacts have to be uniform and not astronomical, because otherwise they cannot be suited to ordinary use.

CLAVIVS.

^c NOW at last you seem to be coming back to yourself, my dear Joseph. But look here: if you do not condemn the use of uniform Epacts, you are wasting your labour in harrying our Epacts so fiercely for being fitted to the civil year.

Quo teneam vultus mutantem Protea nodo? [Horace, *Epistles* I.1.90 — "With what knot am I to hold Proteus as he changes his face?"]

A moment ago you were the assailant of uniform Epacts; now, all at once, as though peace had been made, you come forward as their champion; and presently, changing sides again, you will take the unequal Epacts back into partnership. Admit, then, that when you attacked uniform Epacts with all that Jewish apparatus you laboured in vain, and that now, in defending those same Epacts, you stand on the better side. And admit that when, in order to construct your own table of the exact tropical period, you take up the earlier little table of unequal Epacts, you are serving not the public cause but your own. What sort of consistency is that?

SCALIGER.

[Margin: a]

NOW I shall show how the μετάπτωσις [Greek: metaptōsis, "shifting" — the change-over of the Epacts; printed with a πτ ligature sort] of the Epacts comes about in the tropical year; ^abut first let me clear away another error concerning the Lilian year.

CLAVIVS.

^a WATCH what you are doing, Scaliger. So far you have cleared away no error at all from the Lilian year; on the contrary, in the very place where you tried to correct what you took for a mistake, you yourself made a grave mistake. I greatly

fear that in this other one, which you call an error, you will meet the same fortune — or even a worse one.

SCALIGER.

DE ORDINATIONE EPACTARVM IN CALENDARIO. [On the Arrangement of the Epacts in the Calendar.]

[Margin: b]

^b*JUST AS in the omission of the Bissextiles through three consecutive centuries, so too in the arrangement of the Epacts in the Calendar, the author of the new year has blundered laughably.*

CLAVIVS.

[Margin: b]

^b BUT just as we have shown that, in the omission of the bissextiles through three consecutive centuries, the method we proposed is the most convenient for popular use and not at variance with the truth, so — with God's good help — we shall show that the Epacts could not be better arranged in the Calendar than they have been arranged in the Gregorian Calendar. From this it will also be understood that the author of the new year [printed *noni anni*; recte *noui anni*, as in Scaliger's own line above] did not blunder laughably, as Scaliger says,

as Scaliger says; rather, the man who blunders is the one who prefers an inferior method to it — especially since he brings forward nothing new, but offers up as new the very things that we rejected in the *Apologia* as less suitable and less apt to the matter in hand.

SCALIGER.

^c*THE EPACT □ set alongside continuously through each syzygy — that is, the mark □ taken as a single Epact:*

CLAVIVS.

^c AND YET the order of the new moons required precisely this disposition of the Epacts, as I demonstrated in the *Apologia*, lib.2.cap.3. & 6. What is more, I shall show a little further on that the Epacts have been arranged in the Calendar more correctly in that way than they have been by Scaliger.

SCALIGER.

[Margin: b]

^bAND interruptions were devised, which the Greeks call ἑξαίρεσίμους ἡμέρας [Greek: *exhairetismus hēmeras*, "days taken out," excepted days], so that the months should be full and hollow by turns. And that is what is done when, in place of xxv., he names the Epact xxiiij.

CLAVIVS.

^b AS THOUGH we were the first to devise these interruptions! For consider: Julius Caesar, the Alexandrians, the Council of Nicaea, and all the rest who used the nineteen-year cycle — did they not employ these same interruptions? And what of you yourself, who censure them: do you not employ them? — except that, following the Calendar of the *Compendium*, you have put back 0. 29. in place of the Epacts 25. 24., which we repudiated in the *Apologia*. And the natural order does indeed require that in the Calendar a smaller golden number should follow immediately upon a larger one, and not the reverse, a larger upon a smaller. But this order must necessarily be broken in six places, so that the lunar months may be constituted alternately of 30. and 29. days. For that reason the larger number has to be joined immediately to the smaller — which is exactly what we see done in the old Calendar in six months: February, April, June, August, October, and December. And so I do not see why so learned and so ingenious a man should censure in others what he approves in himself, or why he should palm off on us old material, and our own material, as new and his own. For there can be no doubt whether he has read our *Apologia* right through, given that he has hunted from every quarter for an opportunity of carping at it.

SCALIGER.

^aWHAT could be more ridiculous than that?

CLAVIVS.

IT GRIEVES me that such a man, while he wrongly laughs at others, should have given learned men so large an opportunity of laughing at him. For the two Epacts 25. 24., set against the same day, accomplish exactly what those larger golden numbers accomplished which in six places of the Nicene Calendar came immediately after smaller ones — namely, the correct setting-up of the lunar months. This will readily appear if the Epacts are resolved into the golden numbers of the Council of Nicaea, which is what we did in the *Apologia*,

lib.2.cap.4. How, then, can this be ridiculous, unless the Fathers of the Council of Nicaea, Julius Caesar, and the Alexandrians are to be judged ridiculous as well? And that, assuredly, no one will judge, except a man who plays a second Democritus, laughing at everyone and everything and so offering himself to all as a laughing-stock. Nor is even that true from which you snatch your laugh, when you say that we call the Epact 24. in place of Epact 25. For we do not confuse the Epacts: we call 25. the Epact which is 25., and 24. in the same way. Then, sharp fellow that you are, you throw at us an objection that tells against yourself, since you take the Epacts 0. & 29. into a single partnership [contubernium] in exactly the way that we take 25. & 24.

SCALIGER.

^b*IN THE YEAR 1900. the golden number will be the first, the Lillian Epact xxix., the Lillian Dominical letter G: the Jewish new moon 7.6.651. on 31 March, Lillian. There, then, the Epact xxix. ought to have been placed — where, however, the Epact □ has been set: whereas on the Kalends of April xxix. stands in place of xxviiij.*

CLAVIVS.

^b HERE TOO you thrust our own material on us, doctored by you, and hawk it about. For consider: did we not ourselves place this arrangement in the Calendar of the *Compendium*? Did we not reject it in the *Apologia*? Did we not show why we rejected it? But so that the matter may be understood more plainly, we shall discuss it here too at greater length. That the proper seat of Epact 29. is the first day of April and not the thirty-first of March is taught most aptly by that very year 1900. which you use to fight against us. For since Epact 29., assigned to the first day of April, sets Luna xiiij. on 14. April, while in the year 1900. the mean full moon falls on 14. April at hour 4. after noon, that Luna xiiij. plainly comes immediately before the full moon. What could be done more correctly than this? Whereas if Epact 29. were set in front of the 31st day of March, its Luna xiiij. would fall on 13. April, and consequently, if the following day were a Sunday, Easter would be celebrated before the full moon — which the Canons forbid. Now if Epact 29., written at 31. March, already hurries its own Luna xiiij. forward in that very year 1900., as we have said, how much more awkwardly will Epact 1., placed at 30. March, hurry it forward — which is what your table of the equation appended to this pamphlet gives for the same year — since its Luna xiiij. falls on 12. April and so anticipates the full moon by nearly three days? And so by your table Easter could be celebrated on 13. April, if that day were a Sunday: nearly two days before the full moon. What could be more absurd than that? But next we shall examine that whole equation-table of yours. In compiling it you felt safe

from anyone else's judgement, because you supposed that perhaps no one would undertake the labour of examining it. Now, if you please, let us carry the calculation out to some year very far distant from our own age, so that from this too it may appear plainly that Epact 29. is more correctly assigned by us to 1 April than by you to the last day of March. In the year 20014., then, the golden number will be 8.; and if you consult our equation-table, you will find Epact 29., whose fourteenth falls on 14. April, if it occupies 1 April. Therefore, since the calculation shows the Paschal full moon on 14. April at about hour 13.

after noon, who does not see that Epact 29. has been correctly placed at 1 April, since its fourteenth precedes the full moon by nearly a whole day? Now compare your method with ours: let Epact 29. be placed at the last day of March, as you wish; it will assuredly show the Paschal Luna xiiij. on 13. April — that is, two days before the full moon. Do you see how much more correct and more consistent our method is than yours, even over a long stretch of time?

SCALIGER.

CERTAINLY, if the civil lunar months are to be established full or hollow by turns, then, like it or not, if the Kalends of March have had xxx. or □ (which is the same thing), the thirty-first day of the same month must necessarily have the Epact xxix. in place of that Epact.

CLAVIVS.

^a FOR MY part, I do not see what that necessity is. For the months are constituted full and hollow by turns just as well by the two Epacts 25. 24. taken into a single partnership as by the two 0. 29. which you follow. This one difference remains: that our pair indicates the Paschal Luna xiiij. more correctly than that pair of yours. Read, please, if you have the leisure and the will, the lunations of the thirty cycles of the expanded table of Epacts, which we set out in the *Apologia* lib.2.pag.206. You will see that the lunations are alternately of 30. and 29. days, with a few exceptions, because the nineteen-year cycle and the reckoning of the embolismic months sometimes interrupt this course, on whatever plan it is written out in the Calendar.

SCALIGER.

[Margin: a]

^a*BUT the author of the [new] year guarded against this evil by devising ἑξαίρεσιμδς ἡμέρας after the manner of the Greeks, and by taking the Epacts xxv. xxiiij. into a*

single partnership. Shrewd indeed! This is to κακὸν κακῷ ἰᾶσθαι [Greek: kakon kakō iasthai, "to heal an evil with an evil"; ἰᾶσθαι is set with a single combined σθ sort, whose σ and θ do not letter-separate, and the iota subscript of κακῷ does not resolve on the scan].

CLAVIVS.

^a NO — prudently. For the lunations demanded this, namely that they should be constituted alternately of 30. and 29. days, as was said above. Therefore this is not to κακὸν κακῷ ἰᾶσθαι, as you put it, but to avert an evil by a well-timed remedy — since this equation of the Moon is achieved more correctly through the Epacts 25. 24. than through 0. 29., as we demonstrated more fully in the *Apologia*, and as we showed a little earlier, when we taught that Epact 29. is more correctly placed at the beginning of April than at the end of March with Epact 0. See, then, whether it is not rather *your* taking those two Epacts 0. & 29. into a single partnership, in order to cure this inconvenience, that is κακὸν κακῷ ἰᾶσθαι.

SCALIGER.

[Margin: b]

*IN THE YEAR 1590. the Lilian letter was G: the Lilian Epact xxiiij. The Jewish Paschal new moon 4.23 489. on 5 April, right opposite Epact xxiiij. Correct. * ^bWhat need was there, then, to put xxix. on the Kalends in place of xxviiij.?**

CLAVIVS.

^b THE REASON is ready to hand. For if Epact 29. were moved forward to the last day of March, its Luna xiiij. would run ahead of the full moon by two days, as I explained a little earlier — and this especially, because, since Epacts 24. & 25. are set before that same day, 5 April, on account of the full and hollow months, the proper seat of Epact 29. will be the first day of April.

SCALIGER.

[Margin: c]

FOR IF, as the method required, the Epact xxviiij. had been set on the Kalends, there would have been no need to break open the bars in order to carry the Epact xxiiij. over to 5 April. For the fifth day of April claims the Epact xxiiij. for itself — provided that the Kalends have taken possession of the Epact xxviiij., and not otherwise.

CLAVIVS.

^c YOU ARE mistaken, most learned Scaliger. The method requires that Epact 29. be placed on the Kalends of April, not 28. — precisely so that Epact 29. should not be forced to climb up to the last day of March and to call its Luna xiiij. back to 13. April, with the result that in a number of years it would precede the mean full moon by two days, which is absurd. There is this further point: that if Epact 28. occupied the Kalends of April, its Luna xiiij. would fall on 14. April. So in the year 1851. — to note one case out of many — since the golden number is 9., the Epact 28., and the Paschal full moon falls on 15. April at about hour 15. after noon, that is, on the 16th day, that Luna xiiij. would run ahead of the full moon by nearly two days, contrary to the Canons. This being so, did the method require Epact 28. to be placed on the Kalends, as you wish, or on the second day of April, where it has been placed by us? Nor indeed was there any need to break open the bars, as you say. For Epact 24. did not burst into 5 April by force, as into someone else's property, but came into its own by its own right, as though through an opened door. For the fifth day of April was owed to it by right, on account of the alternating lunations of 30. & 29. days. But I see what you are about: you charge us with the crime that holds good against yourself. It is you who broke the bars open, when you forced Epact 29. into the place of Epact 30. or 0., against the reckoning of the Lunae xiiij., as we demonstrated above.

SCALIGER.

^aFOR NO Praetor can send that Epact into possession of another Epact's [seat], contrary to the deeds.

CLAVIVS.

^a AS THOUGH Epact 24. needed any Praetor's authority to be sent into possession of Epact 25., when for a long time now, by the deeds themselves, it has held that seat by the best right there is! But as for that Epact 29. of yours — what Praetor will ever grant it possession of a seat belonging to another, not merely contrary to the deeds, but contrary to right and religion as well? And this above all when it cannot be done without harm to the commonwealth, since that violence and injury would throw the order and standing of the Lunae xiiij. into confusion.

SCALIGER.

IN THE YEAR 1935. the golden number will be 17., the Lilian Dominical letter F, the new moon [Neomenia] 5.0.580. on 4. April. But the golden number is greater than 11. Therefore, by the Lilian method, the black Epact 25. must be taken. It agrees

correctly, then, with the day proposed, the 4th. Again, in the year 1715. the Dominical letter will be the same, F: the new moon 5.6.667. It will therefore fall on the same day, 4. April. The golden number is vj., which is certainly less than 11. So by the method the red Epact xxv. must be taken. By the method, then, it will fall on 5. April, but by the new moon on the 4th. My question is this: since the new moon both of the year 1935. and of the year 1715. falls on the same weekday, and the Dominical letter is the same, and both agree with the same day — why then have they been given different seats? ^b I would not count it too dear a price — a talent laid against it — to know this mystery. [Margin: b]

CLAVIVS.

^b BUT I will teach you this mystery, most learned Scaliger, for far less — indeed for nothing at all — since you are so eager to know it; for even the springs themselves are thirsty. In the year 1935. the golden number 17. answers to the black Epact 25.; in the year 1715., however, the golden number 6. answers to the red Epact 25. Now the order of the golden numbers in the Calendar requires that the smaller golden number follow immediately after the larger. It is therefore correct to place under the black Epact 25., which answers to the golden number 17., the red Epact 25., which answers to the golden number 6. Otherwise the two golden numbers 17. and 6. would have to be assigned to the same day, 4. April — since the two Epacts would, as you wish, fall on the same day, that is, would have to be taken as one and the same. Who does not see that this is absurd? There you have one explanation of this mystery, and a very good one; now take a second. In the year 1715. the new moon occurred 6. hours later than in the year 1935. What wonder is it, then, if the Epact of the earlier year occupies the higher day and the Epact of the later year the lower? Let me put it more plainly. In the year 1715. the Paschal full moon fell on 18. April at about hour 4. after noon, and hence on the 19th. Now if the red Epact 25. of that year were assigned to 4. April, as you wish, its Luna xiiij. would fall on 17. April, nearly two days before the full moon — which contradicts the Canons. And here is a further way of seeing which of us places and employs the Epacts more correctly. In that very year — to offer one example out of many — you take, by your own method, Epact 26., which you have placed on 3. April; its Luna xiiij. falls on 16. April and runs ahead of the full moon by nearly three days. What could be more inept than that?

SCALIGER.

I KNOW what Clavius has brought forward on this point — things which his own reputation required him either never to have published, or else to have used to remove the error. And in truth he would have done more prudently to correct the

error than to excuse it. "So far is it from being the case," he says, "that the new moons are thrown into confusion, that they are rather restored to their own seats."
[Margin: a]

CLAVIVS.

^a I WOULD much rather that Scaliger — whose reputation I wish well — had said nothing at all about this, so that he might not be convicted of erring twice himself in wrongly marking another man's error. I showed a little earlier that no error is committed in the lunations by reason of the differently coloured Epacts xxv. 25.; on the contrary, that from those very Epacts the Paschal Lunæ xiiiij — which is the main point — are found perfectly correctly. Where, then, does this error lie hidden that Scaliger would have us remove? All this will become much clearer still when we go on to compute a great many full moons against the Scaligerian Epacts.

SCALIGER.

^b *WELL now, what sort of philosophy is this? Two are one, and one is two. One day has been distributed to two Epacts; two Epacts have been gathered into one day.*

CLAVIVS.

^b HERE I cannot help exclaiming: Good God, what is this? A distinguished philosopher and mathematician, one who has stirred not only Flanders and Germany but France as well, declares that he does not understand the very philosophy he himself uses! I beg you, Scaliger, collect yourself and hold back, or you will run onto your own sword-point. Have you not yourself thrown two Epacts, 0. and 29., together into one day? And if you care to scoff, I may scoff at your Epacts in the very same words — for because you assign your Epacts 0. 29. to the same day, you are forced to set beside the preceding day that same black Epact 0. together with Epact 1., whenever the order of the lunations requires it — and I may exclaim along with you: *Well now, what sort of philosophy is this? Two are one, and one is two. One day has been distributed to two Epacts: two Epacts have been gathered into one day.* But we may just as well both laugh at these quibbles together. For the alternation of lunar months of 30. and 29. days necessarily demands that this philosophy be admitted, that two Epacts be brought together into one day, and that one day be distributed to two Epacts of different colour. It remains, since we stand in the same case, to see which of us has made better use of these paired Epacts. For my part, I showed clearly in the *Apologia* lib.2.cap.3. that if we are to follow the authority of the Council of Nicaea, this is

better done by the Epacts 25. 24. than by 0. 29., because in that way the Paschal lunations differ less from the lunations of that Council. It is now your part to show that it is better done by your Epacts 0. 29. — which you will never accomplish.

SCALIGER.

^a *BUT why does an even and continuous arrangement of the Epacts offend them? From the Epacts * 29.28.27.26.25. in March to the like Epacts in April there are 30. days. From Epact 24. and those following in March to the like Epact and those following in April there are only 29. days.*

CLAVIVS.

^a AN even and continuous arrangement of the Epacts does not offend us at all; we rather delight in it. And so we have observed it most carefully in the Calendar, except where the alternation of the lunar months in the Epacts 25. 24. forces it to be done otherwise. And you have done the very same thing — though with less skill — in the Epacts 0. 29.

SCALIGER.

^b *WHY are these in a worse condition than those? Surely all this is trifling.*

CLAVIVS.

^b IN WHAT way "worse"? Is it because the earlier Epacts have lunations of 30. days and the later ones of 29.? On that showing, if they are all to be in equal condition, every lunation will have to be made 30. days long, or else 29. — which no one with even a light tincture of mathematics would think tolerable. But if that is absurd, then it is certainly necessary that one set of Epacts have lunations of 30. days and the other of 29., in alternation. Yet why waste words? If you insist on calling this a fault, you are guilty of the very same fault yourself. Do you deny it? I will proceed against you with your own sealed documents. In your Calendar, from Epact 0. at the beginning of March to the next like Epact there are 30. days; from Epacts 29. 28. 27. and the rest that follow in March to the next like ones there are only 29. days. This shows up still more plainly in the other months: from Epact 29. on the last day of March, and from 28. 27. 26. and the rest that follow in April, to the next like Epacts 29. 28. 27. 26. &c. at the end of April and in May, there are 30. days; whereas from Epact 29. at the end of April, and from 28. 27. 26. and the rest that follow in May, to the next like Epacts 29. 28. 27. 26. &c. in May and June, there are only 29. days. Here I shall cut your throat with your own

sword. For I ask you: *why are these in a worse condition than those? Surely all this is trifling.* But I make your excuses for you: it is not your reckoning of the Epacts that is trifling — it is your speech.

SCALIGER.

^a *THE FAULT in the arrangement of the Epacts in the Calendar is therefore twofold. First, when he placed Epact * on 31. March, but Epact 29. on the Kalends of April, breaking the natural alternation of full and hollow months. Next, when he did not keep even that order, but transferred Epact 24. from the sixth day of the month to the fifth, and shut up two Epacts of the same colour in a single cell, like a pair of [Greek: θεῶς ... ὁμόναος (theous ... homonaous, "gods sharing one and the same shrine") — both words set with the fount's curly ϑ and the 8 (ov) ligature sort; no accent resolves over either ligature, so none is supplied]. And not content with that, he thrust the paired Epacts of different colour, in every month, into the preceding cell.*

CLAVIVS.

^a BUT take care that you do not sin in many ways yourself here too. In neither point is the fault ours. That we assigned Epact 29. to the first day of April, and coupled Epact 24. with Epact 25., we have sufficiently justified above, so that nothing further need be said about it here. For we have kept the natural alternation of full and hollow lunar months perfectly — as is explained at length in the *Apologia* lib.2.cap.3. How manifold, then, is your own fault, when you falsely charge another with a twofold one? And especially when you commit the very thing you censure in us. For you have shut up two Epacts of the same colour, 0. and 29., in a single cell, "like a pair of gods sharing one shrine," to use your own gibe. And in the very point on which you mock us — that we have thrust the paired Epacts of different colour, in every month, into the preceding cell — you bring yourself down.

SCALIGER.

^b *AS FOR why he should have done this, and why that Ethiopian-woman Epact should be preferred to the little red one whenever the golden number is greater than 11. — there was no reason for it, as has been sufficiently shown from what ^b we adduced above.*

CLAVIVS.

^b WE GAVE the fullest possible justification of this matter in the *Apologia* lib.2.cap.3. If you will consider it more attentively, you will certainly not go on asking why I arranged that the black Epact — the one you jokingly call the Ethiopian woman — should be preferred to the little red one whenever the golden number is greater than 11. Because you have rejected that Ethiopian woman, you sometimes find yourself in great straits: for you are forced to crowd two new moons of the same nineteen-year cycle into a single day, namely whenever both Epacts 0. and 29. fall within the same cycle. Truly, had you known the use of this Ethiopian woman, you would have kept her eagerly, and beside Epact 1. you would also have set the black Epact 0. against 30. March, so as to escape by her help the difficulty I have mentioned — a difficulty you will run into in the years 2546. and 2557. For in the year 2546. the golden number will be 1., and by your method, in the table of the true tropical period, the Epact 29.; while in the year 2557. the golden number will be 12., and by that same method of yours the Epact 0. And these two Epacts, 29. and 0., thrown together into the same day, exhibit two new moons of the same cycle on one and the same day. See now from how great a danger that Ethiopian woman, whom you so despise, would rescue you. For if the black Epact 0. were then taken before the red one, this difficulty would be avoided with no trouble at all. You will say: if Epact 1. and the black Epact 0. were then to occupy the same day, we should certainly be stuck in the same mud, and the Ethiopian woman would bring us no help whatever. It is not so. For Epact 1. will never coincide with the black 0. in such a way that both are in use in the same cycle — a point explained more fully with respect to Epact 26. and the black 25. in the *Apologia* lib. 2. cap. 3., and evident in our expanded table, in which no cycle has Epact 1. where Epact * has been placed under a golden number greater than 11. But see how far this error extends — the error into which you have fallen through your contempt for the Ethiopian woman. You will be caught in the same straits in the following years, which I subjoin: 2565. 2576. 2584. 2595. 2603. 2614. 2622. 2633. For taken two by two in order, they are contained within the same nineteen-year cycle; and in the first of each pair golden number 1. coincides with Epact 29., while in the second golden number 12. coincides with Epact 0., by your method. Likewise in these years: 3214. 3225. 3233. 3244. 3252. 3263. 3271. 3282. 3290. 3301. For if they are taken in order two by two, in the first Epact 29. will coincide with golden number 4., and in the second golden number 15. with Epact 0. Likewise in these: 3483. 3494. 3502. 3513. 3521. 3532. 3540. 3551. 3559. 3570. 3578. 3589. For taking them again two by two in order, in the first Epact 29. coincides with golden number 7., and in the second

Epact 0. with golden number 18. Likewise in these years: 4561. 4572. 4580. 4591. 4599. 4610. 4618. 4629. 4637. 4648. 4656. 4667. For in the first, if they are taken in order two by two, Epact 29. will coincide with golden number 2., and in the second Epact 0. with golden number 13. Besides these, in the years 5362. 5373. 5381. 5392. 5400. 5411. 5419. 5430. 5438. 5449. For here again, taking them two by two in order, in the first golden number 5. will coincide with Epact 29., and in the second, with golden number 16., Epact 0. The same, in short, will happen as often as the eight cycles of the ta-

—ble of our expanded table are in use, the ones prefixed with the letters N, G, B, t, q. k, g, d. For in these a golden number greater than 11. always coincides with Epact 0. or *, or 30., and a golden number not greater than 11. with Epact 92. [recte: 29.]; and so you are forced to throw two new moons of the same nineteen-year cycle together into a single day. You would have got yourself out of these rough places easily, with the Ethiopian woman for your guide, had you followed our example and preferred her to the little red one. That it is inept and absurd to assign two new moons of the same cycle to the same day — who does not see it, if he has so much as touched Ecclesiastical Computation with the tip of his lips? For it was precisely with great ingenuity that the nineteen-year cycle was devised, so that in the space of 19. years no new moon should return to the same day. Do you see now what excellent uses that black Epact has? Do you see how often that splendid method of yours collapses once this safeguard is despised? Go now, and mock our Ethiopian woman by comparison with the little red one!

SCALIGER.

^a *THERE remains another difficulty in the arrangement of the Epacts. For the Epacts are Paschal, and were instituted for the sake of Easter; ^a and therefore their beginning ought to have been set in the Paschal month, that is, in March. For March is the first month in the ancient Church. Gregory of Tours calls July the fifth month; Sidonius calls February the twelfth. Since, then, Lilius begins his Epacts not from March but from the Calendar of January, he runs into two drawbacks. The first is that in a bissextile year the new moons after February are thrown into confusion by the intervention of the preceding bissextile day. The second is that from the Kalends of December to 31. January there is no Epact xix. except the one entered on the second of December — even though from the second of December to the last day of January two complete syzygies elapse. Hence it happens that when Epact xix. coincides with golden number 19., no Epact is to be found to mark the second syzygy. It was to meet this drawback that the blackened Epact 19. was contrived, to set its foot in possession of Epact xx. on the last day of December. [Margin: a]*

CLAVIVS.

^a IT COULD indeed have been done as you wish. For the months of January and February have nothing to do with finding Easter, and March is the beginning of the astronomical year. But since the golden number of the new civil and ecclesiastical year begins from January — for the year used in old times always to turn in that month, seeing that in the month of January the golden number indicating the new moon was always greater by one than the golden number which showed the new moon in the preceding December — why should the Epact of the new year not begin along with the golden number? Especially since January and February together contain 59. days, which fill out two lunations, and the lunar months are none the less alternately of 30. and 29. days. As for that disturbance of the new moons by the intervention of the bissextile day, which you dread so greatly, it was always disregarded both by the Council of Nicaea and by the Church — since the golden numbers would disturb the new moons in the same way; if indeed it should be called a disturbance at all, when it can in no way be avoided, whether the year begins from January or from March. But, you say, we have no Epact 19. at the end of December: neither have you one at the end of February. We are therefore on equal terms — except that our reckoning is better than yours in this respect, that whenever golden number 19. coincides with Epact xix. in such a way that in the following year the epact is 1. with golden number 1., you are forced to make a lunation run from 30 January to 29. March, that is, of 59. days, which is ridiculous and monstrous. We, who assign the black Epact 19. to 31. December, are out of that hazard — as has been sufficiently explained in the *Apologia*.

SCALIGER.

^b *LET those foul errors, then, be corrected, and let the Epacts of the Calendar be marked as follows.*

GOOD words, please, my dear Scaliger! I have already shown well enough that there is no error in our Calendar that needs correcting. But if you have a taste for correcting errors, you are welcome to correct your own — of which I have pointed out a fair number, and shall point out more, and serious ones at that; I will not call them foul, so as not to fall myself into the intemperance of language I censure in others. There is one thing, however, that I am eager to learn from you, if it is no trouble: why do you enter the Epacts differently in this Calendar of yours from the way you did in the one you published in your book *De emendatione temporum*? For there you assigned to the same day these two Epacts, 1. and 0., and that in the month of April; but here 0. and 29., in the month of

March. Why are the same Epacts not always set at the beginnings and ends of the months in both Calendars? I ask you, what is the cause of this variation? If you corrected the Epacts rightly there, why do you correct them here again, and differently at that? Have you perhaps corrected the old by the new because, now that we hold up a light in the Calendar of the *Compendium*, you already see more than you saw before? If that is so, I am confident that when you have looked upon the greater light shed by this admonition of ours, these things too will look old to you which are now new.

SEQVITVR CALENDARIVM SCALIGERIANVM.

(THE SCALIGERIAN CALENDAR FOLLOWS.)

THE SCALIGERIAN CALENDAR

(Joseph Scaliger's calendar, printed by Clavius so that his readers may judge it; the Epact columns are Scaliger's own.)

IANVARIVS. (JANUARY)

| Epactæ | Liter. Dom. | | Dies Mensis. |
|--------|-------------|-------|--------------|
| xix | A | Cal. | 1 |
| xviii | b | iii. | 2 |
| xvii | c | ii. | 3 |
| xvi | d | Prid. | 4 |
| xv | e | NON. | 5 |
| xiiii | f | viii | 6 |
| xiii | g | vii | 7 |
| xii | A | vi | 8 |
| xi | b | v | 9 |
| x | c | iiii | 10 |
| ix | d | iii | 11 |
| viii | e | Prid. | 12 |
| vii | f | IDIB. | 13 |
| vi | g | xix | 14 |
| v | A | xviii | 15 |
| iiii | b | xvii | 16 |

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|--------|--------------|
| iiij | c | xvj | 17 |
| ij | d | xv | 18 |
| j | e | xiiiij | 19 |
| o. xxix | f | xiiij | 20 |
| xxviiij | g | xij | 21 |
| xxvij | A | xj | 22 |
| xxvj | b | x | 23 |
| xxv | c | ix | 24 |
| xxiiiij | d | viiij | 25 |
| xxiiij | e | vij | 26 |
| xxij | f | vj | 27 |
| xxj | g | v | 28 |
| xx | A | iiiij | 29 |
| xix | b | iiij | 30 |
| xviiij | c | Prid. | 31 |

FEBRVARIVS. (FEBRUARY)

| Epactæ | Liter. Dom. | | Dies Mensis. |
|--------|-------------|-------|--------------|
| xvij | d | Cal. | 1 |
| xvj | e | iiiij | 2 |
| xv | f | iiij | 3 |
| xiiiij | g | Prid. | 4 |
| xiiij | A | NON. | 5 |
| xij | b | viiij | 5 [recte: 6] |
| xj | c | vij | 7 |
| x | d | vj | 8 |
| ix | e | v | 9 |
| viiij | f | iiiij | 10 |
| vij | g | iiij | 11 |
| vj | A | Prid. | 12 |
| v | b | IDIB. | 13 |

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|--------|--------------|
| iiiij | c | xvj | 14 |
| iiij | d | xv | 15 |
| ij | e | xiiiij | 16 |
| j | f | xiiij | 17 |
| o | g | xij | 18 |
| xxix | A | xj | 19 |
| xxviiij | b | x | 20 |
| xxvij | c | ix | 21 |
| xxvj | d | viiij | 22 |
| xxv | e | vij | 23 |
| xxiiiij | f | vj | 24 |
| xxiiij | g | v | 25 |
| xxij | A | iiiij | 26 |
| xxj | b | iiij | 27 |
| xx | c | Prid. | 28 |
| xix | | | |

MARTIVS. (MARCH)

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|-------|--------------|
| o | d | Cal. | 1 |
| xxix | e | vj | 2 |
| xxviiij | f | v | 3 |
| xxvij | g | iiiij | 4 |
| xxvj | A | iiij | 5 |
| xxv | b | Prid. | 6 |
| xxiiiij | c | NON. | 7 |
| xxiiij | d | viiij | 8 |
| xxij | e | vij | 9 |
| xxj | f | vj | 10 |
| xx | g | v | 11 |
| xix | A | iiiij | 12 |

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|--------|--------------|
| xviiij | b | iiij | 13 |
| xviij | c | Prid. | 14 |
| xvj | d | IDIB. | 15 |
| xv | e | xviij | 16 |
| xiiiij | f | xvj | 17 |
| xiiij | g | xv | 18 |
| xij | A | xiiiij | 19 |
| xj | b | xiiij | 20 |
| x | c | xij | 21 |
| ix | d | xj | 22 |
| viiij | e | x | 23 |
| vij | f | ix | 24 |
| vj | g | viiij | 25 |
| v | A | vij | 26 |
| iiiij | b | vj | 27 |
| iiij | c | v | 28 |
| ij | d | iiiij | 29 |
| j | e | iiij | 30 |
| o. xxix | f | Prid. | 31 |

APRILIS. (APRIL)

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|-------|--------------|
| xxviiij | g | Cal. | 1 |
| xxviij | A | iiiij | 2 |
| xxvj | b | iiij | 3 |
| xxv | c | Prid. | 4 |
| xxiiiij | d | NON. | 5 |
| xxiiij | e | viiij | 6 |
| xxij | f | vij | 7 |
| xxj | g | vj | 8 |
| xx | A | v | 9 |

| Epactæ | Liter. Dom. | | Dies Mensis. |
|--------|-------------|--------|--------------|
| xix | b | iiij | 10 |
| xviiij | c | iiij | 11 |
| xviij | d | Prid. | 12 |
| xvj | e | IDIB. | 13 |
| xv | f | xviiij | 14 |
| xiiiij | g | xviij | 15 |
| xiiij | A | xvj | 16 |
| xij | b | xv | 17 |
| xj | c | xiiiij | 18 |
| x | d | xiiij | 19 |
| ix | e | xij | 20 |
| viiij | f | xj | 21 |
| vij | g | x | 22 |
| vj | A | ix | 23 |
| v | b | viiij | 24 |
| iiiij | c | vij | 25 |
| iiij | d | vj | 26 |
| ij | e | v | 27 |
| j | f | iiiij | 28 |
| o | g | iiij | 29 |
| xxix | A | Prid. | 30 |

MAIVS. (MAY)

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|-------|--------------|
| xxviiij | b | Cal. | 1 |
| xxvij | c | vj | 2 |
| xxvj | d | v | 3 |
| xxv | e | iiiij | 4 |
| xxiiiij | f | iiij | 5 |
| xxiiij | g | Prid. | 6 |
| xxij | A | NON. | 7 |

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|--------|--------------|
| xxj | b | viiij | 8 |
| xx | c | vij | 9 |
| xix | d | vj | 10 |
| xviiij | e | v | 11 |
| xvij | f | iiiij | 12 |
| xvj | g | iiij | 13 |
| xv | A | Prid. | 14 |
| xiiiij | b | IDIB. | 15 |
| xiiij | c | xvij | 16 |
| xij | d | xvj | 17 |
| xj | e | xv | 18 |
| x | f | xiiiij | 19 |
| ix | g | xiiij | 20 |
| viiij | A | xij | 21 |
| vij | b | xj | 22 |
| vj | c | x | 23 |
| v | d | ix | 24 |
| iiiij | e | viiij | 25 |
| iiij | f | vij | 26 |
| ij | g | vj | 27 |
| j | A | v | 28 |
| o. xxix | b | iiiij | 29 |
| xxviiij | c | iiij | 30 |
| xxvij | d | Prid. | 31 |

IVNIVS. (JUNE)

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|-------|--------------|
| xxvj | e | Cal. | 1 |
| xxv | f | iiiij | 2 |
| xxiiiij | g | iiij | 3 |
| xxiiij | A | Prid. | 4 |

| Epactæ | Liter. Dom. | | Dies Mensis. |
|---------|-------------|--------|--------------|
| xxij | b | NON. | 5 |
| xxj | c | viiij | 6 |
| xx | d | vij | 7 |
| xix | e | vj | 8 |
| xviiij | f | v | 9 |
| xvij | g | iiiij | 10 |
| xvj | A | iiij | 11 |
| xv | b | Prid. | 12 |
| xiiiij | c | IDIB. | 13 |
| xiiij | d | xviiij | 14 |
| xij | e | xvij | 15 |
| xj | f | xvj | 16 |
| x | g | xv | 17 |
| ix | A | xiiiij | 18 |
| viiij | b | xiiij | 19 |
| vij | c | xij | 20 |
| vj | d | xj | 21 |
| v | e | x | 22 |
| iiiij | f | ix | 23 |
| iiij | g | viiij | 24 |
| ij | A | vij | 25 |
| j | b | vj | 26 |
| o | c | v | 27 |
| xxix | d | iiiij | 28 |
| xxviiij | e | iiij | 29 |
| xxvij | f | Prid. | 30 |

IVLIVS. (JULY)

| Epactæ | Liter. Dom. | | Dies Menses |
|--------|-------------|------|-------------|
| xxvj | g | Cal. | 1 |
| xxv | A | vj | 2 |

| Epactæ | Liter. Dom. | | Dies Menses |
|---------|-------------|--------|-------------|
| xxiiij | b | v | 3 |
| xxiiij | c | iiij | 4 |
| xxij | d | iiij | 5 |
| xxj | e | Prid. | 6 |
| xx | f | NON. | 7 |
| xix | g | viiij | 8 |
| xviiij | A | vij | 9 |
| xvij | b | vj | 10 |
| xvj | c | v | 11 |
| xv | d | iiij | 12 |
| xiiij | e | iiij | 13 |
| xiiij | f | Prid. | 14 |
| xij | g | IDIB. | 15 |
| xj | A | xvij | 16 |
| x | b | xvj | 17 |
| ix | c | xv | 18 |
| viiij | d | xiiiij | 19 |
| vij | e | xiiij | 20 |
| vj | f | xij | 21 |
| v | g | xj | 22 |
| iiij | A | x | 23 |
| iiij | b | ix | 24 |
| ij | c | viiij | 25 |
| j | d | vij | 26 |
| o xxix | e | vj | 27 |
| xxviiij | f | v | 28 |
| xxvij | g | iiij | 29 |
| xxvj | A | iiij | 30 |
| xxv | b | Prid. | 31 |

AVGVSTVS. (AUGUST)

| Epactæ | Liter. Dom. | Dies Mensis | |
|---------|-------------|-------------|----|
| xxiiij | c | Cal. | 1 |
| xxiiij | d | iiij | 2 |
| xxij | e | iiij | 3 |
| xxj | f | Prid. | 4 |
| xx | g | NON. | 5 |
| xix | A | viiij | 6 |
| xviiij | b | vij | 7 |
| xvij | c | vj | 8 |
| xvj | d | v | 9 |
| xv | e | iiij | 10 |
| xiiij | f | iiij | 11 |
| xiiij | g | Prid. | 12 |
| xij | A | IDIB. | 13 |
| xj | b | xix | 14 |
| x | c | xviiij | 15 |
| ix | d | xvij | 16 |
| viiij | e | xvj | 17 |
| vij | f | xv | 18 |
| vj | g | xiiij | 19 |
| v | A | xiiij | 20 |
| iiij | b | xij | 21 |
| iiij | c | xj | 22 |
| ij | d | x | 23 |
| i | e | ix | 24 |
| o | f | viiij | 25 |
| xxix | g | vij | 26 |
| xxviiij | A | vj | 27 |
| xxvij | b | v | 28 |
| xxvj | c | iiij | 29 |
| xxv | d | iiij | 30 |

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| xxiiij | e | Prid. | 31 |

SEPTEMBER.

| Epactæ | Liter. Dom. | | Dies Mensis |
|---------|-------------|--------|-------------|
| xxiiij | f | Cal. | 1 |
| xxij | g | iiij | 2 |
| xxj | A | iiij | 3 |
| xx | b | Prid. | 4 |
| xix | c | NON. | 5 |
| xviiij | d | viiij | 6 |
| xvij | e | vij | 7 |
| xvj | f | vj | 8 |
| xv | g | v | 9 |
| xiiiij | A | iiij | 10 |
| xiiij | b | iiij | 11 |
| xij | c | Prid. | 12 |
| xj | d | IDIB. | 13 |
| x | e | xviiij | 14 |
| ix | f | xvij | 15 |
| viiij | g | xvj | 16 |
| vij | A | xv | 17 |
| vj | b | xiiiij | 18 |
| v | c | xiiij | 19 |
| iiiij | d | xij | 20 |
| iiij | e | xj | 21 |
| iiij | f | x | 22 |
| j | g | ix | 23 |
| o xxix | A | viiij | 24 |
| xxviiij | b | vij | 25 |
| xxvij | c | vj | 26 |
| xxvj | d | v | 27 |

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| xxv | e | iiij | 28 |
| xxiiij | f | iiij | 29 |
| xxiiij | g | Prid. | 30 |

OCTOBER.

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| xxii | A | Cal. | 1 |
| xxi | b | vi | 2 |
| xx | c | v | 3 |
| xix | d | iiii | 4 |
| xviii | e | iii | 5 |
| xvii | f | Prid. | 6 |
| xvi | g | NON. | 7 |
| xv | A | viii | 8 |
| xiiii | b | vii | 9 |
| xiii | c | vi | 10 |
| xii | d | v | 11 |
| xi | e | iiii | 12 |
| x | f | iii | 13 |
| ix | g | Prid. | 14 |
| viii | A | IDIB. | 15 |
| vii | b | xvii | 16 |
| vi | c | xvi | 17 |
| v | d | xv | 18 |
| iiii | e | xiiii | 19 |
| iii | f | xiii | 20 |
| ii | g | xii | 21 |
| j | A | xi | 22 |
| o | b | x | 23 |
| xxix | c | ix | 24 |
| xxviii | d | viii | 25 |

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| xxvii | e | vii | 26 |
| xxvi | f | vi | 27 |
| xxv | g | v | 28 |
| xxiiii | A | iiii | 29 |
| xxiii | b | iii | 30 |
| xxii | c | Prid. | 31 |

NOVEMBER.

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|--------|-------------|
| xxj | d | Cal. | 1 |
| xx | e | iiij | 2 |
| xix | f | iiij | 3 |
| xviiij | g | Prid. | 4 |
| xviij | A | NON. | 5 |
| xvj | b | viiij | 6 |
| xv | c | vij | 7 |
| xiiiij | d | vj | 8 |
| xiiij | e | v | 9 |
| xij | f | iiij | 10 |
| xj | g | iiij | 11 |
| x | A | Prid. | 12 |
| ix | b | IDIB. | 13 |
| viiij | c | xviiij | 14 |
| vij | d | xviij | 15 |
| vj | e | xvj | 16 |
| v | f | xv | 17 |
| iiiij | g | xiiiij | 18 |
| iiij | A | xiiij | 19 |
| iiij | b | xij | 20 |
| j | c | xj | 21 |
| o xxix | d | x | 22 |

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| xxviii | e | ix | 23 |
| xxvii | f | viii | 24 |
| xxvi | g | vii | 25 |
| xxv | A | vi | 26 |
| xxiiii | b | v | 27 |
| xxiii | c | iiii | 28 |
| xxii | d | iii | 29 |
| xxi | e | Prid. | 30 |

DECEMBER.

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| xx | f | Cal. | 1 |
| xix | g | iiii | 2 |
| xviii | A | iii | 3 |
| xvii | b | Prid. | 4 |
| xvi | c | NON. | 5 |
| xv | d | viii | 6 |
| xiiii | e | vii | 7 |
| xiii | f | vi | 8 |
| xii | g | v | 9 |
| xi | A | iiii | 10 |
| x | b | iii | 11 |
| ix | c | Prid. | 12 |
| viii | d | IDIB. | 13 |
| vii | e | xix | 14 |
| vi | f | xviii | 15 |
| v | g | xvii | 16 |
| iiii | A | xvi | 17 |
| iii | b | xv | 18 |
| ii | c | xiiii | 19 |
| i | d | xiii | 20 |

| Epactæ | Liter. Dom. | | Dies Mensis |
|--------|-------------|-------|-------------|
| o | e | xij | 21 |
| xxix | f | xj | 22 |
| xxviij | g | x | 23 |
| xxvij | A | ix | 24 |
| xxvj | b | viiij | 25 |
| xxv | c | vij | 26 |
| xxiiij | d | vj | 27 |
| xxiij | e | v | 28 |
| xxij | f | iiij | 29 |
| xxj | g | iiij | 30 |
| xx | A | Prid. | 31 |

SCALIGER.

a ...*the CALENDAR having been established in this way.*

CLAVIVS.

a Look hard at what you are doing, my dear Scaliger, and then look again — in case "*one day the flock of birds should come to reclaim its own feathers*" (Horace, *Epistles* I.3.18–19): you know the rest. For you are perfectly well aware that this Calendar of yours is borrowed goods. The whole of it comes from Lilius's Calendar, the one sent to the princes in the *Compendium of the Restitution* — apart from the first two months, which you want to have close the year, and which contribute nothing to finding Easter. Go ahead, then: make your own what belongs to someone else. But have you forgotten that in Book 2 of the *Apologia*, chapter 3, we ourselves pointed out the defects of this Calendar, the very defects for which we thought the less of it?

SCALIGER.

b *No error will follow.*

CLAVIVS.

b What Mercury can guarantee you that? Are you really so sure there is no error? Do you know and have you inspected every recess and byway of that road? We shall show you a great many things you have perhaps never noticed, and from

them you will understand how manifold is the error that follows — especially if your table of the equation is brought into it. Those errors I shall produce later, when I come to examine your tables.

SCALIGER.

c There is no need for that prodigious pairing of two red Epacts, or of as many Epacts of a different colour.

CLAVIVS.

c And how can you prove that, either to anyone else or to yourself? For if there is no need of that "prodigious" (your word) pairing, why have you attached two Epacts, 0. or 30. and 29., to one and the same day? Unless perhaps it fails to be prodigious in your Calendar for this reason, that you adopt the mark 0. for 30. — as if it made any difference which marks you use, when the thing itself is the same. But in truth, most learned Scaliger, if we are willing to look at the light, we shall easily understand that the pairing cannot be avoided, because of the hollow and the full months, and that it is not prodigious but an ingenious device.

SCALIGER.

d Everything will be plain, provided a good starting point is kept — that is, provided the reckoning of the cycles is entered upon according to the lunar μεταπτώσεις [Greek: metaptōseis, "shifts" — the displacements of the Moon].

CLAVIVS.

d Look where you are heading, my dear Scaliger. Come back off the bypath onto the road, and do not let the inviting look of that path deceive you. I tell you in advance and I warn you: it is rough and treacherous, and you will stumble and go astray on it more often than you suppose.

[Margin: a]

SCALIGER.

FOR, as we have already said, in the Julian year the προέμπτωσης [Greek: proemptionsis, the "forward fall" — the advance of the Epacts] of the Epacts occurs ^a after 304 years, which are sixteen complete lunar cycles. In the tropical year, by contrast, the μετέμπτωσης [Greek: metemptionsis, the "backward fall" — the retardation of the Epacts] occurs after 228 or 247 years — that is, alternately after cycles of xij. or xiiij.

CLAVIVS.

a The assumption is false. I showed above that the Moon's anticipation occurs after $312\frac{1}{2}$ years, not after 304.

SCALIGER.

b For these changes cannot occur except by the reckoning of the cycles. Take an example in the Julian year. When the Epact of the first golden number is xi. in the Julian year, as it is today, the new moon falls on 19 March. This will hold for 304 years. Afterwards a προέμπτωσης will take place, and the new moon which fell on 19 March will have moved up to the 18th of the same month; and in the second year of the golden number, when the Epact is 22, the new moon is placed on 7 March; but after 304 years, in the same year of the cycle, that same new moon will have taken its step to the 7th of the month.

CLAVIVS.

b This is not true either. For since the lunations really do run one day ahead in the space of $312\frac{1}{2}$ years — as we said above, and as we taught at length in Book 2 of the *Apologia*, chapter 1 — it is perfectly clear that this anticipation does not fall at the end of a period of cycles. For $312\frac{1}{2}$ years contain sixteen nineteen-year cycles and eight and a half years besides.

SCALIGER.

c From a golden number, then, the change is made to a like golden number — from the first to the first, from the second to the second. Again, in the tropical year, in the first golden number, when the Epact is unity, as it is today, the new moon falls on 30 March. After 228 years [printed anos; recte: annos] that same new moon will have sunk to the 31st of the month, at the point when the Epact of that same golden number will be 0. or *. Since, therefore, the change of the Epacts will take place in the year 1700, after the omission of the bissextile day, and since in that same year 1700 the golden number 10 will be running, the change will accordingly have been made from golden number 10 of the year 1586 to golden number 10 of the year 1700 — and not from the year 1500 to the year 1700.

CLAVIVS.

c I will readily grant you this, provided you take it rightly. For it holds only on this condition: that whenever a change has to be made, the epact assumed with the same golden number is greater or less by one than the preceding epact,

according as the lunations have shifted toward the beginnings or toward the ends of the months. For example, if epact x is running with golden number 8, then epact xj — or ix — must be assumed with that same golden number 8, so that the change is made to a like golden number. You will find that this is always observed in our method. Yet it is not always the same golden number that runs at the beginnings of the changes; your own table of equation shows as much, since different golden numbers correspond to the years in which you decide the change must be made. Still, it cannot be denied that from any golden number to a like one an exact number of cycles has elapsed — or at least one cycle — even though the change does not occur at the beginnings of those cycles, but a little before or a little after. For the change need not occur after a precise number of completed cycles; it is enough that, with the same golden number, an epact greater or less than the preceding one be taken at the time the change has to be made, whether this happens at the beginning of a new cycle or a little after. You will not be able to shake this by any argument.

SCALIGER.

a This, indeed, is ridiculous. For the golden number of the year 1500 is not the same as that of the year 1700.

CLAVIVS.

a You say this as though it were necessary that the golden number be the same at the beginnings of the changes — which I have just shown is not so, and which is no more observed in your method than in ours. For you say that a change is made from the year of Christ 1601 to the year 1733, and yet the golden number in the earlier year is 6 and in the later 5. Again, you want a change to be made from the year 1875 to 2001, and yet the earlier has golden number 4, the later 7. It is therefore not ridiculous that the change should be made from the year 1582 (for which you wrongly put 1500) to 1700, even though the golden number is not the same in both. It is quite enough that around the years in question two epacts differing from one another by a unit should correspond to the same golden number. This, I say, is not ridiculous. What is ridiculous is to carp at another man for the very thing on which, without realizing it, you carp at yourself.

SCALIGER.

b But the learned Clavius says that this change occurs in 312 Julian years — that is, in xvi cycles and one octaeteris. Yet in xvi cycles one whole day is left over from the lunar epilogism. And the octaeteris is greater by one day, 12 hours 41 minutes 33

seconds, than the Julian octaeteris. In this way the compensation would come out. But, as I said, these things do not suit civil use.

CLAVIVS.

b You are not satisfied, learned Scaliger, that the lunations run one day ahead in 312½ years, as we have said repeatedly. Then overturn the calculation on which that advance is built up in the *Apologia*, Book 2, chapter 1. And that you will never manage unless you first show that the Moon anticipates by 1½ hours in the space of 19 years — against the common opinion of all astronomers. Or at least produce some argument for your position worthy of your talent. For the one you did bring forward — that the change must be made from one golden number to a like golden number, to fight against us — you have found to be a leaden dagger.

SCALIGER.

For example: let the Dionysian epact xi of the first golden number mark a new moon on 20 March. At the beginning of the year 313, in which the epact of golden number ix will be x, it will mark — because of the προέμπτωσιν [Greek: proemptōsin, accusative of proemptōsis, "anticipation"] — a new moon on 21 March. ^c So the difference will be two days. So far is it from being true that a proper period of προεμπτῶ[?]εος [Greek: genitive of proemptōsis; one letter at the ink-spread limit] is completed in 312 years. For when the epact of golden number ix is x, then the epact of the first is xij. Thus, as we have already said, the new moon of the year 313 will be two days off from the epoch of the year 305. There was therefore no reason why so great a man should persuade himself that that change occurs in 312 Julian years. For what could he have said more foreign to his own scheme than that in 312 Julian years the new moon falls on 21 March which formerly fell on 19 March — when that is rather a μετέμπτωσις [Greek: metemptōsis, "postponement"] and not a προέμπτωσις? But, as I said, a* προέμπτωσις never occurs in the Julian year, nor a μετέμπτωσις in the tropical, except from one golden number to a like golden number.*

[Margin: [?]] — a single bare siglum letter set in the outer margin beside this paragraph; the glyph does not resolve]

CLAVIVS.

c Well now! What is this sleight of hand? Or is it confidence in your own wit — are you fishing for the applause given to a conjuror? No doubt, if you had not meant to deceive us, you would have argued like this. Whenever epact xi corresponds to golden number 1, epact ix is owed to golden number ix.

Therefore, once $312\frac{1}{2}$ years are completed, because of the anticipation of the lunations (unless it is blocked by the omission of the bissextile), epact xij will correspond to golden number 1, and epact x to golden number ix — and so the lunations will fall one day earlier. That, I say, is how you ought to have argued, in the way I have set out. Where, then, is your difference of two days? Your argument is far too generous, and it can be turned back on yourself. For in the table of the corrected tetracosimeteris, in the year 1865 the golden number is 4 and the epact iiij. Then in the year 2001, in which you want the change downward to be made, the golden number is 7, and so epact iij will correspond to it. But whenever epact iij corresponds to golden number 7, epact 0 is owed to golden number 4. Therefore the new moon which in the year 1865 is marked on 27 March by golden number 4 — or by epact iiij — will fall, after the year 2001 (since the golden number is again 4 and the epact 0), on the last day of March. So the difference will be three days. But it is foolish to let oneself be driven by tricks and quibbles away from things that are perfectly clear in themselves. The right way to argue was this. When epact iiij corresponds to golden number 4, epact vij is owed to golden number 7. Therefore, when the change downward has to be made, epact iij will correspond to golden number 4, and epact vj to golden number 7 — and so the lunations will fall one day later.

SCALIGER.

a But Lilius did not act prudently either, when he says that a προέμπτωση occurs every 300 Julian years. For it happens no more in 300 than in 312: neither number is a nineteen-year number [printed decemnouennalis].

CLAVIVS.

a How prudently Lilius acted in putting forward a method suited to civil use is plain enough from *Apologia* ca.4. lib.2., where this method, advancing by 300 years, is explained. Nor does it matter at all that neither of these numbers, 300 and 312, is a nineteen-year number, as we said above when we showed that the change is not made from one golden number to a like golden number.

SCALIGER.

b Let us then set up a table in which, once the collected years of Christ have been noted at intervals of 132 and 136, the Jewish new moon is also noted according to the intervals of the cycles between the epoch of the years of Christ beginning from the year 1557 and the epoch of the collected years. Then, from the Julian

anticipation, the tropical μετέμπτωσης will easily be detected, according to the bissextiles to be rejected [biffexta reijcula].

CLAVIVS.

b But that Jewish new moon is no less opposed to the true reckoning of the cycles — as far as the fourteenth moons are concerned — than the Jews are to Christians. You will grasp this well enough yourself once you see that by its deception you have got yourself entangled in a great many very serious errors.

SCALIGER.

So that you may take this in more readily, here is the table we have set out below. Its first column contains the years of Christ collected at twice 132 and once 136. The second column contains the Julian solar cycle; the third, the dominical letter corresponding to it; the fourth,

TABVLA ÆQVATIONIS EPACTARVM

In Tetracosiieteride Emendata.

[Table of the equation of the epacts, in the corrected tetracosimeteris.]

Columns 6–8 (*Feria* | *Horæ* | *Scrup.* 1080.) stand under the spanning head *Neomenia Iudaica* ("Jewish new moon").

| Anni
Christi
collecti | Cycli
Solis
Iuliani. | Littera
Dominicalis
anni tropici | A
urora | | Sc
rupula | Interu
alla Cyclo
rū Lunar
ium | Dies
mensis
Iuliani. | Die
re
iectij | Vera
Litera | | Epa
cta
anni tropici | Aur.
Numerus
primus |
|-----------------------------|----------------------------|--|---------------------------------------|-------------------------------------|--------------|---|----------------------------|---------------------|----------------|-------|----------------------------|---------------------------|
| | | | Lite
ra
Do
m.
Iulia
na | .
N
u
m
. F
er
ia | | | | | | | | |
| 1601 | 14 | D | 6 | 3. | 3
3
7 | 1 | 24.
M | 10 | G | 3.A | 26 | 1 |
| 1733 | 6 | G | 5 | 2. | 6
7
3 | 8 | 5. M | 11 | D | 16.M | 15 | 1 |
| 1865 | 26 | C | 4 | 2. | 7
2 | 15 | 15. | 12 | A | 2[?]. | 4 | 1 |

| <i>Anni
Chrif
ti
collec
ti</i> | <i>Cycl
us
Solis
Iulia
n.</i> | <i>Lite
ra
Do
m.
Iulia
na</i> | <i>A
u
r
.N
u
F
er
ia</i> | <i>Sc
r
u
p.
1
0
8
0.</i> | <i>Interu
alla
Cyclo
rū
Lunar
ium</i> | <i>Dies
menf
is
Iulia
ni.</i> | <i>Di
es
rei
ect
itij</i> | <i>Vera
Litera
Domi
n.
anni
tropic
i</i> | <i>Dies
menf
is
tropi
ci</i> | <i>Epa
cta
anni
trop
ici</i> | <i>Au
r.
Nu
m.
pri
mu
s</i> |
|--|---|---|---|---|---|---|---|--|--|--|---|
| 2001 | 22 | A | 7 7. | 7 4 8 | 22 | 12.
M | 13 | G | 25.M | 6 | 9 |
| 2133 | 14 | D | 6 1. | 7 1 7 | 29 | 22.
M | 14 | D | 5.A | 24 | 29 |
| 2265 | 6 | G | 5 7. | 5 3 | 36 | 3. M | 15 | A | 19.M | 12 | 28 |
| 2401 | 2 | E | 8 5. | 7 9 | 43 | 28.
Feb. | 16 | G | 16.M | 15 | 28 |
| 2533 | 22 | A | 7 6. | 1 2 8 | 50 | 10.
M | 17 | D | 27.M | 4 | 28 |
| 2665 | 14 | D | 6 6. | 1 7 7 | 57 | 21.
M | 18 | A | 8.A | 21 | 26 |
| 2801 | 10 | B | 9 5. | 2 0 3 | 64 | 17.
M | 19 | G | 5.A | 24 | 26 |
| 2933 | 2 | E | 8 4. | 5 3 9 | 71 | 26.
Feb. | 20 | D | 18.M | 13 | 26 |
| 3065 | 22 | A | 7 4. | 5 8 8 | 78 | 8. M | 21 | A | 29.M | 2 | 26 |
| 3201 | 18 | F | 1 3.
0 | 5 0 | 85 | 5. M | 22 | G | 27.M | 4 | 35 |

| <i>Anni
Chrif
ti
collec
ti</i> | <i>Cycl
us
Solis
Iulia
n.</i> | <i>Lite
ra
Do
m.
Iulia
na</i> | <i>A
u
r
.
N
u
F
er
ia</i> | <i>Sc
r
u
p.
1
0
8
0.</i> | <i>Interu
alla
Cyclo
rū
Lunar
ium</i> | <i>Dies
menf
is
Iulia
ni.</i> | <i>Di
es
rei
ect
itij</i> | <i>Vera
Litera
Domi
n.
anni
tropic
i</i> | <i>Dies
menf
is
tropi
ci</i> | <i>Epa
cta
anni
trop
ici</i> | <i>Au
r.
Nu
m.
pri
mu
s</i> |
|--|---|---|--|---|---|---|---|--|--|--|---|
| 3333 | 10 | B | 9 3. | 6 6 3 | 92 | 15.
M | 23 | D | 7.A | 22 | 24 |
| 3465 | 2 | E | 8 2. | 9 9 9 | 99 | 24.
Feb. | 24 | A | 20.M | 11 | 24 |
| 3601 | 26 | C | 1 7.
1 | 1 0 2 5 | 106 | 21.
M | 25 | G | 15.A | 14 | 24 |
| 3733 | 18 | F | 1 1.
0 | 1 0 1 4 | 113 | 3. M | 26 | D | 29.M | 2 | 23 |
| 3865 | 10 | B | 9 1. | 4 3 | 120 | 14.
M | 27 | A | 10.A | 19 | 21 |
| 4001 | 6 | G | 2 7. | 6 9 | 127 | 10.
M | 28 | G | 7.A | 22 | 21 |
| 4133 | 26 | C | 1 6.
1 | 4 0 5 | 134 | 19.
M | 29 | D | 17.A | 12 | 22 |
| 4265 | 18 | F | 1 6.
0 | 3 4 9 | 141 | 1. M | 30 | A | 31.M | 29 | 20 |
| 4401 | 14 | D | 1 5.
3 | 4 8 0 | 148 | 16.
Feb. | 31 | G | 29.M | 2 | 20 |
| 4533 | 6 | G | 1 5. | 5 | 155 | 8. M | 32 | D | 9.A | 20 | 19 |

| | | | A | | Sc | | | | | | | |
|--------|-------|-------|------|----|----|--------|-------|------|--------|-------|------|-----|
| | | | u | | r | | | | | | | |
| | | | Lite | | u | Interu | | | | | | |
| Anni | Cycl | ra | . | | p. | alla | Dies | Di | Vera | | | Au |
| Chrif | us | Do | N | | 1 | Cyclo | menf | es | Litera | Dies | Epa | Nu |
| ti | Solis | m. | u | F | 0 | rū | is | rei | n. | menf | cta | m. |
| collec | Iulia | Iulia | m | er | 8 | Lunar | Iulia | ect | anni | is | anni | pri |
| ti | n. | na | . | ia | 0. | ium | ni. | itij | tropic | tropi | trop | mu |
| | | | 2 | | 2 | | | | | | | |
| | | | | | 9 | | | | | | | |
| 4665 | 26 | C | 1 | 4. | 8 | 162 | 17. | 33 | A | 19.A | 10 | 20 |
| | | | 1 | | 6 | | M | | | | | |
| | | | | | 5 | | | | | | | |
| 4801 | 22 | A | 1 | [n | 8 | 169 | 14. | 34 | G | 19.A | 12 | 19 |
| | | | 4 | u | 0 | | M | | | | | |
| | | | | m | 7 | | | | | | | |
| | | | | er | | | | | | | | |
| | | | | al | | | | | | | | |
| | | | | :? | | | | | | | | |
| | | | |] | | | | | | | | |

Anni afteriscis notati sunt ἐκβόλιμα [Greek: *ekbolima*, "intercalary" — literally "thrown in"]. — The years marked with asterisks are intercalary.

- the golden number likewise agreeing with that same year; the fifth, the Jewish new moon; the sixth, the intervals of the cycles — that is, of the golden numbers — between the year proposed and the years of Christ from 1577 to 1595 inclusive, as you have it above in the Table of the cycle. An example. To the year of Christ 1601 there agrees golden number 6. From the year of Christ 1582, in which the same golden number stood, to the year proposed*
- there are 19 years, and therefore one complete cycle. So add 2.16.595 — the amount belonging to one cycle — to the new moon 7.10.822, which is the new moon of that year 1582, and you will have the new moon 3.3.337 for the proposed year 1601. And since the Julian dominical letter is D, the third weekday, which belongs to the new moon, will fall on the letter F, and so on 24 Martij Julian, as you have it in the seventh column. But since 10 days have been struck out of the Julian year — the number recorded in the eighth column — the new moon will accordingly be found on 3 April of the

tropical year, again on the third weekday, since the dominical letter is G. Again, for the year 3465: the interval of cycles from the year of Christ 1584 is exactly 99 cycles. So the character of 99 cycles, namely 7.6.585, added to the new moon 2.4.414 of the year of Christ 1584, will make up the new moon 2.10.999 for the proposed year 3465, on 24 Februarij Julian, on the second weekday, as the Julian dominical letter E notes. And since the 24 days to be rejected present themselves in column 8, that same new moon will fall on the 20th day of tropical Martij, on the letter B — that is, on the second weekday, since the tropical dominical letter of that year will be A; therefore letter B, the second weekday. In the eleventh column stand the epacts of the new moons reckoned from the conjunction Moon itself — the Moon, that is, from which the fifteenth Moon is the paschal term. In the twelfth column is noted the first golden number, which will be in use in that year and thereafter until it is changed again. Finally, the* ἐκβόλιμοι *or rejected lunar months are marked wherever the new moon passes beyond 4 April.* ^a *For, counting from 4 April, the fifteenth day will be the Christians' fourteenth, or the fifteenth of the Jewish Nisan.*

[Margin: a]

CLAVIVS.

a We have refuted this sufficiently above, where we showed that the paschal term is Luna xiiij. counted from the new moon, and not the xv. or the full moon. On this matter there is more in *Apologia* lib.1. cap. 1.& 3., and again lib.2.cap.6.

SCALIGER.

In the year 2133 the new moon has been placed on V. April, and the fifteenth day reckoned from it falls on xix. April — beyond the last paschal term. Instead of the April new moon, therefore, the Martij new moon must be taken, opposite epact xxiiij.; that is, on the seventh of Martij, and the fifteenth day reckoned from it ends on xxi. Martij. Therefore, although a cycle consists of 235 syzygies, whenever an ἐκβόλιμος month falls in it the cycle then has only 234 syzygies. And so from the year of Christ 2114, in which the new moon fell on the iiij. of April, to the proposed year 2133, although 19 years have gone by and hence 235 syzygies, that cycle will nevertheless have only 234 syzygies, because the paschal syzygy falls on 7 Martij and not on v. April. ^a *How much safer — indeed how much truer — this method is for detecting the Moon's metempsychoses in the tropical year than the one that proceeds by 300 or by 3012 [?] years, let Clavius himself be the judge.*

[Margin: *a*]

CLAVIVS.

a We see it otherwise. Whether rightly or not, we shall see a little later, when we compare the two methods and demonstrate so plainly that ours is by far the safer and the truer in marking the fourteenth moons that we shall not refuse even Scaliger himself as judge.

SCALIGER.

b And he, at any rate, will not deny that this table has been carried through with elegant craftsmanship.

CLAVIVS.

b I do not in fact deny that this table has been carried through with elegant craftsmanship; but I am afraid it has more elegance than truth, as anyone will readily see who checks it against the reckoning. Now I put one question to you: what kind of craftsmanship is it that in the year 1733 a day is thrown out — so that the lunations descend by a day in the Calendar, seeing that 304 years have not yet passed since the year 1601 — and yet your method keeps the same epact with golden number 1 as in the year 1601? The same thing happens in practice in the year 1865. It is astonishing how many errors arise from this carelessness in tracking down the fourteenth moons. This will be established from the table of the tropical period, which has been developed with much the same craftsmanship. It is this latter table that we shall sift, rather than the other (though we shall show by several examples that the other is false as well), since you set more store by it than by the first — and especially because you put it before all nations and peoples as a rule and standard of truth, as though it had dropped from heaven, by which the judgments of all in the correction of the Calendar are to be guided. Meanwhile let this serve as a sample of both: each of them not rarely throws the lunations forward toward the ends of the months, so that they occur two days later than they ought. That happens from the year 2533 to the year 2665, and from the year 3733 to the year 3865, in the corrected tetracositeris. Then from the year 2537 to the year 2673, and from the year 294 [?] to the year 3073; likewise from the year 3471 to the year 3609, and from the year 4817 to the year 4949, in the proper tropical period. What could you have said more foreign to your own design? For either the Moon needs an equation, on account of its anticipation in 304 years, or it does not. If it does need one, the new moons will certainly stay as they were, because of the omission of the bissextile

day. For the one day by which the new moons are forced to descend toward the ends of the months — on account of the rejection of the day that the equation of the solar year demands — is restored toward the beginnings of the months by the Moon's anticipation. How, then, will they descend by two days, as you would have it? If on the other hand the Moon does not require an equation, the new moons will descend by one day only, because of the omission of the day in the bissextile year. This error flowed from your not having taken account, as you should have, of the anticipation and postponement of the lunations, but only of the Jewish new moon, to which you fitted your epacts. The result is that they are not fit for tracking down the paschal Lunæ xiiij., as can be understood from the few examples appended here.

Appendix ad Novi Calendarii Romani Apologiam — Joseph Scaliger's *Anni Liliani Elenchus & castigatio*, with Clavius's replies (continued)

The table below carries no printed caption; it is the set of worked examples Clavius announced at the foot of the preceding leaf. Column heads, transcribed verbatim (the four narrow heads are set rotated 90°, reading bottom-to-top), with their English sense:

- Anni Domini — Years of the Lord
- Aureus Numerus. — Golden number
- Epactæ Gregor. — Gregorian epact
- Epactæ Scalig. — Scaliger's epact
- Lun. xiiij. Gregor. — Gregorian Luna xiiij
- Lun. xiiij. Scalig. — Scaliger's Luna xiiij
- Dies exempti Scal. — Days omitted, Scaliger's reckoning
- Dies exempti Greg. — Days omitted, Gregorian reckoning
- Plenil. media Gregoriana. — Gregorian mean full moon
- Plenil. media Scaligeriana. — Scaligerian mean full moon

The last two columns carry the sub-head D.H. (*dies, hora* — day, hour); the trailing A. in the Luna xiiij and full-moon columns is Aprilis (April).

| An
ni
Do
mi
ni | Aure
us
Num
erus. | Epac
tæ
Greg
or. | Epac
tæ
Scali
g. | Lun.
xiiij.
Grego
r. | Lun.
xiiij.
Scalig. | Dies
exem
pti
Scal. | Dies
exem
pti
Greg. | Plenil.
media
Gregoria
na.
(D.H.) | Plenil.
media
Scaligeri
ana.
(D.H.) |
|----------------------------|----------------------------|---------------------------|---------------------------|-------------------------------|---------------------------|------------------------------|------------------------------|---|---|
| 18
70 | 9 | 28 | 29 | 15. A. | 13. A. | 12 | 12 | 15.7.A | 15.7.A |
| 18
89 | 9 | 28 | 29 | 15. A. | 13. A. | 12 | 12 | 15.0.A | 15 0.A |
| 19
27 | 9 | 27 | 29 | 16. A. | 13. A. | 12 | 13 | 16.8.A | 15.8.A |
| 19
46 | 9 | 27 | 29 | 16. A. | 13. A. | 12 | 13 | 16.1.A | 15.1.A |
| 19
65 | 9 | 27 | 29 | 16. A. | 13. A. | 12 | 13 | 15.18.A | 14.18.A |

There you have it: in these years your Luna xiiij. anticipates the full moon by two days, or by three — which is against the canons. Our Luna xiiij., by contrast, precedes the mean full moon by one day at most, or else falls on the full moon itself, which agrees with the canons. I could set down six hundred examples of this kind; I knowingly leave them out, because I am saving the more exacting examination for the table of the proper tropical period. So you see that what I said is true: your table of the corrected tetracosimeteris has more elegance in it than truth.

SCALIGER.

[Margin: a]

If the epacts of the cycle-table were always self-consistent from the year of our Lord 1577 onward, ^a the matter would already be settled, since they could safely be taken for the equable and ordinary epacts, which advance by an increment of eleven.

CLAVIVS.

^a The five examples just above show exactly how far the matter would be settled, and how safely we could adopt those epacts; and the examination of the table of the proper tropical period will teach the same thing still more plainly.

SCALIGER.

[Margin: b]

As it is, however, some of them shift, while the rest stay intact in their own place — as anyone who cares to test it can establish. ^b Therefore the epacts drawn from the perpetual cycle of epacts will sometimes have the fourteenth moon as the paschal term and sometimes the fifteenth; and this is not an error of the authors of the new year, but of the equable epacts themselves.

CLAVIVS.

[Margin: b]

^b We have said again and again that this does not happen by design but comes about by chance: it follows from the nature of the cycle that Luna xiiij sometimes falls on Luna xv, that is, on the full moon — as you yourself affirm. The fault, then, if fault it must be called, is committed when the fourteenth day falls on the fifteenth, not when it falls on the fourteenth; the latter is in fact rather what one would wish, as may be gathered from the canons and from the decrees of the Fathers. The proof is this: if the fourteenth falls on the full moon and on a Sunday, Easter has to be transferred to Luna xxij. — and yet that is the very thing the canons order to be avoided so far as it can be. You do the opposite, in making Luna xv. the paschal term.

SCALIGER.

^a *But here is where the authors of the year go wrong: they prescribe that in the year 1598 Easter be kept on 22 March and not on 29 March, though they know that the fault committed there is a shameful one.*

CLAVIVS.

^a Enough! Stop battering us about the Easter of 1598, rashly reproaching us with errors and slandering us. In pressing that objection so often, take care that the fault you commit is not fouler than the fault of the men whose offence there you call shameful. I have said it often enough already — but a man who objects the more often has to be answered the more often: that Easter will be kept correctly, both by the usage of the Church and by the prescriptions of the canons. The grounds for this we set out in the *Apologia* lib.2.cap.6. So how do you dare to say that we know a shameful fault is committed there?

SCALIGER.

[Margin: b]

But they will object that this evil cannot be met, on account of the equability of the epacts. Since they have resolved to preserve that equability, every drawback will be guarded against^b if from the epact they always take the fifteenth day inclusive, and not, as they are used to do, the fourteenth. For occasionally — though very rarely — the full moon will be indicated too late; and the authors themselves admit that this defect is more tolerable than if the full moon is anticipated.

CLAVIVS.

^b Is that really it, my dear Scaliger — do you issue this pronouncement like the Pythia from Phoebus's tripod? For who are you, to take it upon yourself to frame a rule by which the rule of all the Fathers about the paschal terms is overturned? Do you not see where your stubbornness is carrying you, when, to set up those paschal terms of yours, you confound not only human law but divine law as well? But look how shrewd and convenient that rule of yours is going to be, if it is adopted. For from it

Easter would be kept over and over on Luna xxij., against the canons — every time, that is, that Luna x v. fell on a Sunday. How many other faults that rule of yours could go on to breed, we shall show later.

SCALIGER.

^c *So the nearest term of the paschal new moon will be vij. Martij, while the remotest new moon will be iiij. Aprilis: that is, the epact of the nearest term will be xiiij. [?] , and of the remotest xxv.*

CLAVIVS.

^c I beg you, my dear Scaliger: do not let the heat of your own cleverness carry you off and drive you headlong. It is monstrous how much you take upon yourself, when against so many councils, canons, and decrees of the Fathers — and against the teaching of everyone who has written on the right celebration of Easter — you try to overturn the new moons and the paschal terms. For who, since the Council of Nicæa, has ever seen, read, or accepted that the first paschal new moon was 7 March and the last 4 April? Or do you not know that everyone who has handed down rules on this subject prescribes as follows: if the new moon falls, say, on 8 March, the paschal term is set on the 21st of the same month, and not, as you would have it, on the 22nd? By what right, then, do you at this point

postpone the customary paschal term by one day — and do the same with the other paschal terms? Who was there ever — I will not say a Supreme Pontiff, but an emperor, a king, or a tyrant — who gave orders so unrestrainedly as to want to govern the whole world and shape it to his own pleasure, against the settled custom and usage of every nation? How do you suppose the Easterners — to say nothing of the rest — are going to accept this command of yours, when in this business they refuse absolutely to depart from the Council of Nicæa [printed Concilio; recte: Concilio]? So if you set about correcting the Calendar, be careful not to overstep the terms the Fathers laid down; otherwise you will nowhere find fair ears or fair minds to listen.

SCALIGER.

[Margin: a]

^a *In this way nothing further will remain that could either offend fair minds or hand the unfair a handle for criticism. As for those who dream of a ἀναποδισμόν [Greek: ἀναποδισμόν (anapodismon, "retrogression, stepping back"); the initial alpha shows no clearly legible breathing mark at this resolution] of the vernal equinox by three and by four days, and the reverse — they really do show how little they see in these studies. That is a thing which cannot be refuted in a few words.*

CLAVIUS.

^a You are wrong, if I may say so without offence, most learned Scaliger — and grievously wrong. That novel scheme of yours would offend the minds of all the Easterners, who from the Council of Nicæa down to the present have kept the paschal terms together with the Roman Church. It would offend all Catholics, when they saw the canons altered with no weightier cause. And finally, fair-minded and unfair alike would snatch at the handle for criticism, resenting that we should depart from an ancient custom — and one confirmed, at that, by councils and by the decrees of the Popes.

SCALIGER.

^b *But another flaw comes in. Since the difference between the tropical year and the Julian is hor.0. Min.10. Sec.44. Ter.24., in 400 years it mounts up to hor.71. Min.36. — that is, three days less 24 minutes. Now in 2000 years those minutes make 2 hours, and in 24000 a whole day: which, admittedly, is bound to occur only after so many thousands of years.*

CLAVIVS.

^b This flaw did not deceive us in the least, as we set out in lib.1. Apol. cap. 5.; so nothing new is being urged against us. But a flaw of this order, whatever it comes to, is not worth so much that to avoid it one should bring in a harder and less popular scheme of intercalation than the one that proceeds by 400 years. For even if those neglected fractions do introduce an error of one day over a span of about 24000 years (as Scaliger will have it), we have nonetheless prescribed in the *Apologia* lib.1.cap. 5. and lib. 2. cap.4. a method by which our successors, if the world lasts that long, will be able to remedy so slight an error. And what of this — that perhaps before 24000 years are out another form of intercalation will have to be instituted? For it is uncertain whether the present one, which proceeds by 400 years, or alternately by 132 and 136, will keep the equinox on 2[?]. Martij through many thousands of years, since we do not yet hold the true length of the year sufficiently well examined.

SCALIGER.

[Margin: a]

^a *Even so, it was in the interest not only of posterity to use as accurate a year as possible, but also of the authors of the year to put forward one as accurate as possible — which does not happen if we keep the tetracosimeteris as the solar period. For the tetracosimeteris that will follow after 20000 years will have to be docked not of three bissextile days, as the rest are, but of four. And besides, after 12000 years that flaw will already begin to be felt and perceived in the new moons and the equinoxes, on account of the half-day — which will tug the ear of the correctors of the year who will be alive in that age, and will cry out plainly that the oncoming disorder must be met.*

CLAVIVS.

^a I do not deny it, supposing we could "play to the stage and the crowd," as the phrase goes. But matters of this kind ought to be weighed not on a goldsmith's balance but on the common scales, especially since the length of the year is not yet, as we said, well enough known and understood. That is why it was sufficient to have put forward a mean year — the Alphonsine, that is — which you too approve, and rightly approve: because up to now, given the weakness of human wit and the obscurity of the subject, no more accurate mean year has been able to be found. Indeed, if we consider the matter more attentively, we shall find—

—we shall find (given the length of the year that we use) that after 2 0000. years the equinox still holds close to 21. Martij, since in the year 20005 it occurs on the 20th day, after midnight, as we gathered in the *Apologia* lib.1.cap. 6.; and that the Lunæ xiiij. agree with the canons, since, as we said above, in the year 20014 the golden number is 8 and the epact xxix., and its fourteenth day is 14 April, while the mean full moon falls on the 14th day at about the 13th hour after noon. And so at that time the tetracosimeteris will not have to be docked of four bissextile days, nor need anyone fear that the flaw you prophesy for 12000 years from now will begin to be felt and noticed in the new moons and the equinoxes on account of the halved day. That day will by no means — whatever you falsely proclaim — tug the ear of the correctors of the year who will live in that age, nor will it cry out that an oncoming disorder must be met; for no disorder at all will come.

SCALIGER.

[Margin: b]

So let the tetracosimeteris be rejected, and let bissextile days be taken out at alternating intervals of 132. and 136. years, until, when this has been done fourteen times, the solar cycle comes round again to its starting point. For in 134. one bissextile day is lost, and in 268. two bissextile days are done away with — that is, in the years 132. and 136. For in this way a number divisible by four will result, which cannot be had in 134. years. If, then, seven times 268. years are taken, or (what comes to the same thing) 132.136. are alternated fourteen times, a period of 1876. years will result. ^b And the common people will certainly grow used to this alternation more easily than to the centuries of the Lilian period.

CLAVIVS.

^b Do you really claim that in the end the common people will grow used to that alternation of yours more easily than to the centuries of the Lilian period? How do you know? Is it because you suppose the crowd will favour Scaliger more than Lilius, and so put the Scaligerian scheme ahead of the Lilian? The thing speaks for itself: a form of intercalation that advances evenly by centuries of years, and is in every way like the customary intercalation applied every fourth year, is more popular than yours, which limps along unevenly through an alternation of 132. and 136. years. But if you do persuade the common people of this — the thing you are trying to persuade us of — you will be a great Apollo in my eyes.

SCALIGER.

^c *For who does not see this, and who would not rather be astonished that Clavius prefers the removal of bissextile days across three consecutive centuries to this method?*

CLAVIVS.

^c Nobody sees it but you. So either you alone see and all the rest are blind, or else, if the rest see, you alone are dreaming. For at the assembly on the correction of the Calendar that even scheme of intercalation was judged by everyone's vote to be the easier and the more popular, while yours was rejected for its unevenness — so that I can only wonder that you, trusting your own wit, have taken up the defence of a case already throttled by the verdicts of so many most learned men.

SCALIGER.

^d *And Clavius, to be sure, would not have done this, nor would the other authors of the new form, if they had noticed this point beforehand, before the year was published. We have appended a table made up of two periods, whose construction, form, and method are the same as those of the one above, so that it needs no separate explanation. The Dominical letters with which the solar cycle begins, throughout all the metempsychoses [metempsychosibus], are contained in this distich:*

Gaude digne coli. gaude fax clara bonorum. Felix esto bonis, ades & deuotus amicis.

[Rejoice, you who deserve to be honoured; rejoice, bright torch of good men. / Be kind to the good; be present, and devoted to your friends. — the mnemonic works from the initial letters of the words, which give the Dominical letters in order.]

SEQVITVRTABVLÆQVATIONIS

Epactarum in iusta periodo tropica.

[HERE FOLLOWS THE TABLE OF THE EQUATION of the Epacts in the proper tropical period.]

in iusta periodo tropica.

Scaliger's table, printed in full. The first (unlabelled) column carries the intercalary mark; an asterisk there marks an intercalary year, not an epact of 30 (see the note printed beneath the table). The tenth column, "Dies Neomeniæ in mense Iuliana," holds a day-number at the left of the cell and the month abbreviation (M = Martij, Feb. = Februarij) at the right; both are given here in one cell. A / M in the "Dies Neomeniæ in anno tropico" column are Aprilis / Martij.

| | | | | | S | | | | | | | |
|-------|------|------|---|-------|----|-------|-------|-------|------|-------|----|-----|
| | | | A | | c | | Dies | | | | Ep | |
| | | | u | | r | | Neo | | | Dies | ac | Epa |
| | Cycl | Lite | r | Neo | u | Inter | meni | | | Neo | ta | ct. |
| Anni | us | ra | . | meni | p. | ualla | æ in | Lite. | Di | meni | N | Aur |
| Chri | Soli | Do | N | a | 1 | Cyclo | mens | Do. | es | æ in | eo | . |
| sti | s | m. | u | Iudai | 0 | rū | e | ann. | rei | anno | m | Nu |
| colle | Iuli | Iuli | m | ca — | 8 | Luna | Iulia | trop | ect | tropi | en | m. |
| cti | an. | ana | . | Feria | 0. | rium | na | . | itij | co | . | 1. |
| 1601 | 14 | D | 6 | 3 | 3 | 1 | 24. M | G | 10 | 3.A | 6 | 1 |
| | | | | | 3 | | | | | | | |
| | | | | | 7 | | | | | | | |
| 1733 | 6 | G | 5 | 2 | 6 | 8 | 5. M | D | 11 | 16.M | 15 | 1 |
| | | | | | 7 | | | | | | | |
| | | | | | 3 | | | | | | | |
| 1869 | 2 | F | 8 | 7 | 6 | 15 | 1. M | C | 12 | 13.M | 18 | 1 |
| | | | | | 9 | | | | | | | |
| | | | | | 9 | | | | | | | |
| 2001 | 12 | A | 7 | 7 | 7 | 22 | 12. M | G | 13 | 25.M | 6 | 0 |
| | | | | | 4 | | | | | | | |
| | | | | | 8 | | | | | | | |
| 2137 | 18 | F | 0 | 6 | 6 | 29 | 8. M | F | 14 | 22.M | 9 | 0 |
| | | | | | 9 | | | | | | | |
| | | | | | 9 | | | | | | | |
| 2269 | 0 | B | 9 | 6 | 8 | 36 | 19. M | C | 15 | 3.A | 26 | 28 |
| | | | | | 2 | | | | | | | |

| Anni
Chri
colle
cti | Cycl
us
Soli
Iuli
an. | Lite
ra
Do
m.
Iuli
ana | A
u
r
Neo
meni
N
a
u
Iudai
ca —
Feria | S
c
r
u
p.
1
0
8
0. | Inter
ualla
Cyclo
rū
Luna
rium | Dies
Neo
meni
æ in
mens
e
Iulia
na | Lite.
Do.
ann.
trop
. | Di
es
rei
ect
itij | Dies
Neo
meni
æ in
anno
tropi
co | Ep
ac
ta
N
eo
m
en
. | Epa
ct.
Aur
.
Nu
m.
1. |
|------------------------------|-----------------------------------|---------------------------------------|---|---|---|---|-----------------------------------|--------------------------------|--|---|--|
| 2405 | 6 | G | 1 5
2 | 3
8
4
9 | 43 | 15. M | B | 16 | 31.M | 29 | 28 |
| 2537 | 26 | D | 1 4
1 | 1
0
5 | 50 | 24. M | F | 17 | 10.A | 19 | 29 |
| 2673 | 22 | A | 1 4
4 | 9
2
4 | 57 | 22. M | E | 18 | 9.A | 20 | 27 |
| 2805 | 14 | D | 1 3
3 | 1
8
0 | 64 | 3. M | B | 19 | 22.M | 9 | 27 |
| 2941 | 10 | B | 1 1
6 | 2
0
6 | 71 | 27.
Feb. | A | 20 | 19.M | 12 | 27 |
| 3073 | 2 | E | 1 2
5 | 2
5
5 | 78 | 10. M | E | 21 | 31.M | 29 | 25 |
| 3209 | 26 | C | 1 7
8 | 2
8
1 | 85 | 6. M | D | 22 | 28.M | 3 | 26 |
| 3341 | 18 | F | 1 1
7 | 3
3
0 | 92 | 17. M | A | 23 | 9.A | 20 | 24 |
| 3477 | 4 | D | 1 6 | 3
5
6 | 100 | 13. M | G | 24 | 6.A | 23 | 23 |

| Anni
Chri
colle
cti | Cycl
us
Soli
Iuli
an. | Lite
ra
Do
m.
Iuli
ana | A
u
r
Neo
meni
a
Iudai
ca —
Feria | S
c
r
u
p.
1
0
8
0. | Inter
ualla
Cyclo
rū
Luna
rium | Dies
Neo
meni
æ in
mens
e
Iulia
na | Lite.
Do.
ann.
trop
. | Di
es
rei
ect
itij | Dies
Neo
meni
æ in
anno
tropi
co | Ep
ac
ta
N
eo
m
en
. | Epa
ct.
Aur
.
Nu
m.
1. |
|------------------------------|-----------------------------------|---------------------------------------|---|---|---|---|-----------------------------------|--------------------------------|--|---|--|
| 3609 | 6 | G | 1 1
9 | 2
0
7 | 107 | 25.
Feb. | D | 25 | 22.M | 9 | 21 |
| 3745 | 2 | E | 3 3 | 7
1
8 | 114 | 19. M | C | 26 | 14.A | 15 | 23 |
| 3877 | 22 | A | 2 4 | 7
6
7 | 121 | 1. M | G | 27 | 28.M | 3 | 22 |
| 4013 | 18 | F | 5 2 | 7
9
3 | 128 | 26.
Feb. | F | 28 | 26.M | 5 | 21 |
| 4145 | 10 | B | 4 3 | 8
4
2 | 135 | 8. M | C | 29 | 6.A | 23 | 20 |
| 4281 | 6 | G | 7 1 | 8
6
8 | 142 | 4. M | B | 30 | 3.A | 26 | 20 |
| 4413 | 26 | C | 6 2 | 9
1
7 | 149 | 15. M | F | 31 | 15.A | 14 | 19 |
| 4549 | 2 | A | 9 1 | 9
4
3 | 156 | 12. M | E | 32 | 13.A | 16 | 18 |
| 4681 | 14 | D | 8 6 | 1
9
9 | 163 | 20.
Feb. | B | 33 | 25.M | 6 | 19 |
| 4817 | 20 | B | 1 5 | 2 | 170 | 17. M | A | 34 | 20.A | 9 | 19 |

| | | | | S | | | | | | | | |
|-------|------|------|-----|-------|----|-------|-------|-------|------|-------|-----|-----|
| | | | | A | c | Dies | | | | Ep | | |
| | | | | u | r | Neo | | | | ac | Epa | |
| | | | | r | u | meni | | | | ta | ct. | |
| Anni | Cycl | Lite | Neo | . | p. | Inter | æ in | Lite. | Di | meni | N | Aur |
| Chri | Soli | Do | a | | 1 | ualla | mens | Do. | es | æ in | eo | . |
| sti | s | m. | u | Iudai | 0 | rū | e | ann. | rei | anno | m | Nu |
| colle | Iuli | Iuli | m | ca — | 8 | Luna | Iulia | trop | ect | tropi | en | m. |
| cti | an. | ana | . | Feria | 0. | rium | na | . | itij | co | . | 1. |
| | | | | 1 | 2 | | | | | | | |
| | | | | | 5 | | | | | | | |
| 4949 | 2 | E | 1 5 | | 2 | 177 | 27. | E | 35 | 3.A | 26 | 17 |
| | | | | 0 | 6 | Feb. | | | | | | |
| | | | | | 9 | | | | | | | |
| 5085 | 26 | C | 1 3 | | 3 | 184 | 24. | D | 36 | 1.A | 28 | 16 |
| | | | | 3 | 0 | Feb. | | | | | | |
| | | | | | 0 | | | | | | | |
| 5217 | 18 | F | 1 4 | | 3 | 191 | 6. M | A | 37 | 12.A | 17 | 16 |
| | | | | 2 | 4 | | | | | | | |
| | | | | | 9 | | | | | | | |
| 5353 | 14 | D | 1 2 | | 3 | 198 | 3. M | G | 38 | 10.A | 19 | 15 |
| | | | | 5 | 7 | | | | | | | |
| | | | | | 5 | | | | | | | |

Anni asteriscis notati sunt ἐκβόλιμοι. [The years marked with asterisks are ἐκβόλιμοι (ekbolimoi, "intercalary").]

CLAVIVS.

^d Do you really claim that we, before the calendar year was published, had failed to notice that the form of intercalation could be set up by alternating periods of 132 and 136 years? I am astonished that it should have occurred to you to announce such a thing — which you certainly would not have done if, before publishing this castigation of yours, you had noticed what we set out in the *Apologia*. Read book 1, chapter 5 of the *Apologia*, if you please: you will find that we teach in explicit words that the omission of the bissextile days can indeed be managed in this way, but that we judged the arrangement by centuries of years preferable, as being easier, better suited to the ordinary man's grasp, and — the main point — safer. There you have the crime; there you have the reason why

Saliger [Scaliger], otherwise a most learned man, single-handedly indicts the Gregorian Calendar, which the whole world has approved by consensus. Indicts, do I say? No: without even stating the charge, he chastises it bitterly and savagely — so that it is only fair that so equitable a judge should himself, in the old Roman fashion, be prosecuted for extortion.

Come then: since we have answered his charges sufficiently, let us say a few words about our emender and corrector himself, so that it may appear more plainly whether what he promises so confidently really is an improvement. Let us therefore look a little more closely at the Scaligerian tables, which he himself extols to the skies. First, then, as concerns the table above for the 19 years of one cycle, from 1577 to 1595: I miss your consistency, most learned Scaliger. For I find that it agrees neither with your own perpetual cycle of epacts nor with your doctrine. In the table for the proper tropical period you want epact 1 to answer to golden number 1 from the year 1601 onward; so tell me, please, why in 1577 — which is only 24 years earlier, so that no change in the Moon can have taken place in the interval — you assign epact ij to that same golden number 1? Or, if you allot epact ij to golden number 1 in 1577, why do you not assign that same epact ij to the same golden number 1 in 1601? Reason would certainly demand it. Or do you hold that epact ij must be assigned to golden number 1 in 1577 in order to keep to the Jewish new moon, which you fixed on 29 March? If you accept that, the error will creep further, for you will see that most of the epacts of the remaining 18 years of that table turn out to be faulty. For whenever epact ij answers to golden number 1, then, by your own perpetual cycle, the other golden numbers will — for as long as that same nineteen-year cycle lasts — take the epacts of the table we insert here; and a great many of those epacts differ completely from the ones you entered in that table of yours.

The epacts of the perpetual cycle (Ep. cyc. perp.) set against Scaliger's epacts (Epact. Scal.) for each golden number (Aur. num.). The printed table is broken into two halves, golden numbers 1–10 and 11–19; the last cell of the second half is blank.

| Aur.num. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------|----|-----|--------|---|-----|-------|-------|-----|------|----|
| Ep. cyc. perp. | ij | xij | xxiiij | v | xvj | xxvij | viiij | xix | o | x |
| Epact. Scal. | ij | xij | xxiiij | v | xvj | xxvij | vij | xix | xxix | x |

| Aur.num. | 11 | 12 | 13 | 14 | 1
5 | 16 | 17 | 1
8 | 1
9 |
|----------------|------|------|-------|--------|--------|------|---------|--------|--------|
| Ep. cyc. perp. | xxij | ijj | xiiij | xxv | v
j | xvij | xxviiij | i
x | x
x |
| Epact. Scal. | xxj | iiij | xiiij | xxiiij | v
j | xvij | xxviiij | i
x | x
x |

Look: only ten of the epacts of this table agree with yours, namely at years 1, 4, 5, 8, 10, 13, 15, 17, 18, 19 of the cycle. In the rest they diverge. And if epact 1 were assigned to golden number 1 in 1577, just as it is from 1601 onward — as is right, since in that year, no day yet having been rejected apart from the 10, the Moon needs no equation — a far greater discrepancy will appear, as this second table shows.

| Aur.num. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1
0 |
|----------------|----|-----|--------|------|-----|------|-----|--------|------|--------|
| Ep. cyc. perp. | j | xij | xxiiij | iiij | xv | xxvj | vij | xviiij | xxix | x |
| Epact. Scal. | ij | xij | xxiiij | v | xvj | xxvj | vij | xix | xxix | x
j |

| Aur.num. | 11 | 12 | 13 | 14 | 1
5 | 16 | 17 | 18 | 19 |
|----------------|---------|------|-------|--------|--------|------|---------|-------|---------|
| Ep. cyc. perp. | xx
j | ij | xiiij | xxiiij | v | xvj | xxvij | viiij | xi
x |
| Epact. Scal. | xx
j | iiij | xiiij | xxiiij | v
j | xvij | xxviiij | ix | xx |

Do you see that they agree in only seven places, namely at years 2, 3, 6, 7, 9, 11, 14 of the cycle? And that at golden numbers 12 and 16 the difference amounts to two units — which is utterly absurd, as the calculation will show in a moment? And, besides, that epact iiij of golden number 12 has been generated from the preceding epact by the addition of 13 units — which is altogether monstrous, and entirely alien to the reckoning of the new moons? You will say that this came about through the intervention of the bissextile day. I take the point; but tell me this as well: why did the same not happen in years 4, 8, 16, which are also bissextile? Why should these be in a worse condition (to use your own words) than that one? Certainly the lunations of any given year cannot recede toward the beginnings of the months from the lunations of the immediately preceding year

by more than 11 days — at most 12 in a bissextile year — since the epact of a single year is 10 days, 15 hours, 11 minutes, 22 seconds if the year is common, but 11 days, 15 hours, 11 minutes, 22 seconds if it is bissextile, as we set out in the *Apologia*, book 2, chapter 6. But the lunations marked by your epacts for year 12 stand 13 days away from the lunations of year 11 that the epacts indicate — except in those months which assign the two epacts 0 and xxix to the same day. This is plain in May and April. For from epact xxi in May, which shows the new moon in year 11, to epact iiij, by which you want the new moon of year 12 to be marked in April, 13 days are counted; whereas the calculation gives the difference between these two mean new moons as only 11 days, 15 hours, 11 minutes, 21 seconds — a figure less than twelve days, let alone thirteen. Come, let us consult the calculation. In 1587 the mean new moon of May fell on day 6, hour 23, minute 50, second 31. In 1588, however, the mean new moon in April occurs on day 25, hour 8, minute 39, second 10 — and yet your epact iiij puts it back on day 25, well before the mean new moon, which must be assigned to day 26. Now if we subtract 25 April, hour 8, minute 39, second 10 from 6 May — that is, from 36 April, hour 23, minute 50, second 31 — the stated difference of 11 days, 15 hours, 11 minutes, 21 seconds remains. Where, pray, is the difference of 13 days here? But I suppose this holds only for the mean new moons of the years in question, not for the true ones as well. On the contrary, it holds no less of the true than of the mean: for the true new moons of those same two years and months are not a full 12 days apart from one another either, as is clear from the *Ephemerides* of Io. Antonius Maginus [Giovanni Antonio Magini]. Do you see what snares the Jewish new moons have led you into, snares you can never get yourself out of? — namely that you anticipate the new moons in the heavens, and set one further apart from the other than the reckoning demands, which is nothing else than to confound and disorder the whole theory of the new moons.

But let us also compare some of your fourteenth moons for those same years with ours, and with the mean full moons, so that we may see which of us has ordered the epacts in the Calendar more correctly for the Church's use, and which chooses the epacts better for indicating the ecclesiastical new moons. From this too it will appear that the new moons have not been correctly marked by you, and that you interrupted the even progression of the epacts by elevens without cause, so as to arrange the new moons otherwise. For this is the only reason you can plead on your own behalf for the epacts of those 19 years differing from the epacts of the perpetual cycle and not advancing evenly by 11. For since the new moons must be established in such a way (as I taught in the *Apologia*, book 2, chapter 6) that the fourteenth moons do not run two days ahead of the full moons — lest, if the following fourteenth day were a Sunday, Easter should be celebrated before the

full moon — we shall find from the calculation that you have very rarely kept to this. Here is the table, with the epacts,

the fourteenth moons and the mean full moons.

Column heads as printed: Anni Domini | Aur. numerus | Epacta Greg. | Epacta Scal. | Lun.xiiij. Gregor. | Lun.xiiij. Scalig. | Plenilunia media. | Dies, quibus xiiij. Scal. præueniunt plenil. (the days by which Scaliger's fourteenth moons anticipate the full moons). In the moon-date columns A = Aprilis, M = Martij; in the Plenilunia media column H. is the hour.

| Anni Domini | Aur. numerus | Epacta Greg. | Epacta Scal. | Lun.xiiij. Gregor. | Lun.xiiij. Scalig. | Plenilunia media. | Dies, quibus xiiij. Scal. præueniunt plenil. |
|-------------|--------------|--------------|--------------|--------------------|--------------------|-------------------|--|
| 1577 | 1 | 1 | 2 | 12. A | 11. A | 12.A.H.1
0 | 2 |
| 1581 | 5 | 15 | 16 | 29. M | 28. M | 29.M.H.1
0 | 2 |
| 1586 | 10 | 10 | 11 | 3. A | 2. A | 3.A.H. 8 | 2 |
| 1588 | 12 | 2 | 4 | 11. A | 9. A | 10.A.H.1
4 | 2 |
| 1589 | 13 | 13 | 14 | 31. M | 30. M | 0.A.H. 1 | 3 |
| 1591 | 15 | 5 | 6 | 8. A | 7. A | 8.A.H. 5 | 2 |
| 1592 | 16 | 16 | 18 | 28. M | 26. M | 27.A.H.1
4 | 2 |
| 1593 | 17 | 27 | 28 | 16. A | 14. A | 15.A.H.1
2 | 2 |
| 1595 | 19 | 19 | 20 | 25. M | 24. M | 25 M.H. 5 | 2 |

We assign a full moon that falls after midday to the following day, on the doctrine of everyone who has written on the computus — a doctrine you yourself will not deny, since you attribute to the following day a new moon that comes 18 hours after the preceding sunset. Therefore, when your fourteenth moon precedes the full moon by two days, be aware that you are offending against the Canons. For if your fifteenth moon were a Sunday, you would celebrate Easter before the full moon, that is, on the true fourteenth moon — which the canons do not permit. And when your fourteenth moon runs almost three days ahead of the full moon, as happens in 1589, Easter would be celebrated two days before the full moon, on

the thirteenth moon, before the Jews' Passover — which is even more absurd. But perhaps you will say: does your own fourteenth moon [printed Luna *iiiij.*; recte: *xiiiij.*] not anticipate at all in that year? It does anticipate somewhat, but still by a whole day less than yours — which is in fact a consequence of the nature of the cycle. For no cycle, however arranged in the Calendar, can avoid every drawback. The one thing we must take the greatest pains over is that it be so arranged as to contain the fewest possible errors; and this we are confident we have achieved in the Gregorian Calendar, since far fewer errors are found in it than in yours — as appears partly from the table of 19 years given above, and partly, and much more clearly, in the examination of your table of the equation of the proper tropical period. Moreover, in these 9 years of the table above, even if not your fifteenth moon but your sixteenth were a Sunday, Easter would still be celebrated after the fifteenth moon (as you have wrongly, and against the Canons, decreed it must be) — on the full moon itself, which you nevertheless flatly deny to be permissible. And so you put on the very thing you feared. Therefore, whether Easter is celebrated next after the fourteenth moon or after the fifteenth, it is settled that your Jewish new moons are false in those 9 years. Indeed — and this is even more intolerable, and against all the writers on the computus — in those same 9 years you place the epacts on the very days on which the mean new moons fall. So there you have it, my dear Joseph: how false and deceptive that table of yours for 19 years is — the very table you make the foundation of your table of the equation of the proper tropical period. And so that table, resting on so weak a foundation, is bound to be utterly ruinous, as will be clear in a moment from its examination.

To begin with, then, I observe that in changing the epacts that answer to golden number 1 you took account neither of the anticipation of the new moons, which you claim occurs in 304 years, nor of the days removed, each one of which requires the current epact to be changed into the next lower one. This is indeed the greatest error, and it is the parent of the rest. For before 304 years have elapsed from the epoch, or root, the current epact must be changed into the lower one as many times as days have been removed. But as often as 304 years have elapsed, that many units must be subtracted from the number of rejected days, so that the remainder shows by how many units a smaller — that is, a lower — epact is to be taken. This you did not observe; instead you put your trust solely in the Jewish new moons of the table of 19 years above, which, as we said earlier, drove you into error. Go on now, believe the Jews, and take the reward of your credulity! But look at the error into which the Jewish new moons have brought you. From 1581 to 1733 the 304 years have not yet elapsed, and so the Moon needs no equation. Therefore, since one day is removed in 1733, the epact 2

running with golden number 1 (given that epact xvj answers to golden number 5 in 1581) must be changed into the lower one, 1 — which you did, and rightly. Next, from 1584 to 1869 there are likewise not 304 years. Therefore, since another day is removed in 1869, so that at that point two days will have been rejected since the correction, the epact to be taken would be xvij, two units smaller than epact xix, which runs with golden number 8 in 1584. Consequently golden number 1 ought to have epact 0, or *, answering to it, and not epact 1, as you have it in the table. Again, from 1583 to 2001 three days will have been taken away, and the 304 years are counted once: therefore the epact to be assumed would be v, smaller by two than epact vij, which on your own authority answers to golden number 7 in 1583; that is, the epact of golden number 1 ought to be 29, not 0 as you would have it. Next, from 1587 to 2537 the 304 years are contained three times. So, subtracting three from the 7 days that will then have been removed, 4 remain; and the epact to be taken would be smaller by that many units than 21, which answers to golden number 11 in 1587 — that is, epact 17. And therefore epact 27 must be assigned to golden number 1, whereas you assign epact 29. Furthermore, from 1595 to 3609 the 304 years are reckoned six times. So if you subtract six from the 15 days that will then have been removed, 9 remain. Therefore 9 must be taken from epact 20, which answers to golden number 19 in 1595, so that epact xi remains as the one answering to that same golden number 19 in the year 3609; and so epact 23 will be due to golden number 1 — and yet you assign epact 21 to golden number 1. Do you see how great and how grave the collapses are? Finally, if we care to examine the other years of the table of the proper tropical period in the same way, taking from your table of 19 years the year that has the same golden number as the year assumed in the table of the proper period, we shall find that you very rarely assign to golden number 1 the epact that the reckoning of the Moon's anticipation and retardation requires. And what other cause is there of an error so great, and spread so far and wide, except that you tied the epacts to the Jewish new moons alone? From this it must follow that intolerable errors arise in the new moons and in the fourteenth moons, as the appended table of 50 years shows. In it we have set down, in the first place, the years of the Lord; then the golden

Table of fifty years (the *tabula 50 annorum* announced at the end of the preceding leaf: "as the appended table of 50 years shows"). The table occupies the whole page; the description of its twelve columns follows on the next page.

Column heads as printed: Anni Domini | Aureus Numerus | Epactæ Gregorianæ | Epactæ Scaligerianæ | Lunæ xiiij. Greg. | Lunæ xiiij. Scal. | Plenilunia media Gregoriana (sub-heads H. M.) | Plenilunia media Scaligeriana (sub-heads H. M.) |

Literæ Dom. Gregor. | Literæ Dom. Scalig. | Dies exempti Cal.Greg | Dies
exempti Cal.Scal.

| A
u
n
i
D
o
m
i
n
i | A
u
n
i
D
o
m
i
n
i | re
n
u
s
Ep
act
æ
Gre
gor
ian
æ | Ep
act
æ
Gre
gor
ian
æ | Lu
næ
xiii
j.
Gr
eg. | Lu
næ
xiii
j.
Sca
l. | Pleni
l.
medi
a
Greg
oria
na
H. | Pleni
l.
medi
a
Greg
oria
na
M. | Pleni
l.
medi
a
Scali
geria
na
H. | Pleni
l.
medi
a
Scali
geria
na
M. | Lite
ræ
Do
m.
Gre
gor. | Lite
ræ
Do
m.
Sca
lig. | Dies
exe
mpt
i
Cal.
Gre
g | Dies
exe
mpt
i
Cal.
Scal. |
|--|--|---|--|-------------------------------------|-------------------------------------|--|--|--|--|---------------------------------------|---------------------------------------|---|--|
| 1
7
1
5 | 6 | 25 | 26 | 18.
A | 16.
A | 18. | 4.A | 17. | 4.A | F | E | 11 | 10 |
| 1
7
3
4 | 6 | 25 | 26 | 18.
A | 16.
A | 17. | 20.A | 17. | 20.A | C | C | 11 | 11 |
| 1
7
3
7 | 9 | 28 | 29 | 15.
A | 13.
A | 14. | 11.A | 14. | 11.A | F | F | 11 | 11 |
| 1
7
5
3 | 6 | 25 | 26 | 18.
A | 16.
A | 17. | 13.A | 17. | 13.A | G | G | 11 | 11 |
| 1
7
7
5 | 9 | 28 | 29 | 15.
A | 13.
A | 14. | 21.A | 14. | 21.A | A | A | 11 | 11 |
| 1
7
8
3 | 1
7 | 26 | 27 | 17.
A | 15.
A | 16. | 9.A | 16. | 9.A | E | E | 11 | 11 |

| A
A u
n re
n u
i s | | Ep | | | | Pleni | Pleni | Pleni | Pleni | | | Die | |
|--------------------------------|----|-----|------|------|------|-------|-------|-------|-------|------|------|------|-------|
| D | N | act | Epa | Lu | Lu | l. | l. | l. | l. | Lite | Lite | s | Dies |
| o | u | æ | ctæ | næ | næ | medi | medi | medi | medi | ræ | ræ | exe | exe |
| m | m | Gre | Scal | xiii | xiii | a | a | a | a | Do | Do | mpt | mpt |
| i | er | gor | iger | j. | j. | Greg | Greg | Scali | Scali | m. | m. | Cal. | i |
| n | u | ian | ian | Gr | Sca | oria | oria | geria | geria | Gre | Sca | Gre | Cal. |
| i | s | æ | æ | eg. | l. | na | na | na | na | gor. | lig. | g | Scal. |
| 1 | 6 | 25 | 26 | 18. | 16. | 17. | 22.A | 17. | 22.A | B | B | 11 | 11 |
| 7 | | | | A | A | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 1 | 9 | 28 | 29 | 15. | 13. | 14. | 13.A | 14. | 13.A | E | E | 11 | 11 |
| 7 | | | | A | A | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 1 | 1 | 26 | 27 | 17. | 15. | 17. | 2.A | 16. | 2.A | C | B | 12 | 11 |
| 8 | 7 | | | A | A | | | | | | | | |
| 0 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 1 | 9 | 28 | 29 | 15. | 13. | 15. | 6.A | 14. | 6.A | C | B | 12 | 11 |
| 8 | | | | A | A | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 1 | 9 | 28 | 29 | 15. | 13. | 15. | 15.A | 14. | 15.A | E | D | 12 | 11 |
| 8 | | | | A | A | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 1 | 1 | 26 | 27 | 17. | 15. | 17. | 3.A | 16. | 3.A | B | A | 12 | 11 |
| 8 | 7 | | | A | A | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 1 | 1 | 26 | 27 | 17. | 15. | 16. | 20.A | 16. | 20.A | F | F | 12 | 12 |
| 8 | 7 | | | A | A | | | | | | | | |

| A | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|
| A u | | | | | | | | | | | | | |
| n re | | | | | | | | | | | | | |
| n u | | | | | | | | | | | | | |
| i s | | | | | | | | | | | | | |
| Ep | | | | | | | | | | | | | |
| D N | | | | | | | | | | | | | |
| o u | | | | | | | | | | | | | |
| m m | | | | | | | | | | | | | |
| i er | | | | | | | | | | | | | |
| n u | | | | | | | | | | | | | |
| i s | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 1 1 26 27 17. 15. 16. 12.A 16. 12.A C C 12 12 | | | | | | | | | | | | | |
| 8 7 A A | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 1 1 * 2 13. 11. 13. 7.A 1. 7.A A G 13 12 | | | | | | | | | | | | | |
| 9 2 A A | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 1 1 29 1 14. 12. 14. 20.A 13. 20.A E D 13 12 | | | | | | | | | | | | | |
| 9 A A | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 1 1 29 1 14. 12. 14. 13.A 13. 13.A B A 13 12 | | | | | | | | | | | | | |
| 9 A A | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 1 1 29 1 14. 12. 14. 5.A 13. 5.A F E 13 12 | | | | | | | | | | | | | |
| 9 A A | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 1 1 * 2 13. 11. 13. 2.A 12. 2.A D C 13 12 | | | | | | | | | | | | | |
| 9 2 A A | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |

| A
A u
n re
n u
i s | | Ep | | | | Pleni | Pleni | Pleni | Pleni | | | Die | |
|--------------------------------|---------------|---------------------|-------------------------|----------------------|----------------------|---------------------------|---------------------------|-----------------------------|-----------------------------|------------------------|------------------------|----------------------|---------------------------|
| D o m i n i | N u m e r i s | act æ Gre gor ian æ | Epa ctæ Scal iger ian æ | Lu næ xiii j. Gr eg. | Lu næ xiii j. Sca l. | l. medi a Greg oria na H. | l. medi a Greg oria na M. | l. medi a Scali geria na H. | l. medi a Scali geria na M. | Lite ræ Do m. Gre gor. | Lite ræ Do m. Sca lig. | exe mpt i Cal. Gre g | Dies exe mpt i Cal. Scal. |
| 1 9 9 5 | 1 | 29 | 1 | 14. A | 12. A | 14. | 14.A | 13. | 14.A | A | G | 13 | 12 |
| 2 2 1 5 | 1 2 | 29 | 1 | 14. A | 12. A | 14. | 8.A | 13. | 8.A | A | G | 15 | 14 |
| 2 2 1 9 | 1 6 | 3 | 15 | 31. M | 29. M | 31. | 14.M | 30. | 8.M | C | B | 15 | 14 |
| 2 2 2 3 | 1 | 28 | 0 | 15. A | 13. A | 15. | 21.A | 14. | 21.A | E | D | 15 | 14 |
| 2 2 3 4 | 1 2 | 29 | 1 | 14. A | 12. A | 14. | 1.A | 13. | 1.A | E | D | 15 | 14 |
| 2 2 3 8 | 1 6 | 13 | 15 | 31. M | 29. M | 31. | 1.M | 30. | 1.M | G | F | 15 | 14 |
| 2 5 | 1 2 | 28 | 29 | 15. A | 13. A | 15. | 9.A | 14. | 9.A | A | G | 17 | 16 |

| A u n re n u i s Ep N act Epa Lu Lu Pleni Pleni Pleni Pleni Die s exe Dies o u æ ctæ næ næ l. l. l. l. Lite Lite exe m m Gre Scal xiii xiii a medi medi a medi a ræ ræ mpt i mpt i n u er gor iger j. j. Greg oria Greg oria Scali Scali m. m. Cal. Cal. i s æ æ eg. l. H. M. H. M. gor. lig. g Scal. | | | | | | | | | | | | | |
|---|----|----|----|------|------|-----|------|-----|------|---|---|----|----|
| 19 | | | | | | | | | | | | | |
| 2537 | 11 | 17 | 19 | 27.M | 25.M | 27. | 4.M | 27. | 4.M | F | F | 17 | 17 |
| 2538 | 12 | 28 | 0 | 15.A | 13.A | 15. | 1.A | 15. | 1.A | E | E | 17 | 17 |
| 2557 | 12 | 8 | 0 | 15.A | 13.A | 14. | 18.A | 14. | 18.A | B | B | 17 | 17 |
| 2575 | 11 | 17 | 19 | 27.M | 25.M | 27. | 13.M | 27. | 13.M | A | A | 17 | 17 |
| 2594 | 11 | 17 | 19 | 27.M | 25.M | 27. | 5.M | 27. | 5.M | E | E | 17 | 17 |
| 2595 | 12 | 28 | 0 | 15.A | 13.A | 15. | 3.A | 15. | 3.A | D | D | 17 | 17 |

| A
A u
n re
n u
i s | | Ep
N act | Epa
u æ | Lu
næ | Lu
næ | Pleni
l. medi | Pleni
l. medi | Pleni
l. medi | Pleni
l. medi | | | Die
s exe | Dies
exe |
|--------------------------------|--------|------------------------|--------------------------|----------------------|----------------------|--------------------------|--------------------------|----------------------------|----------------------------|---------------------------------|---------------------------------|---------------------------|------------------------|
| Dom
m er
n u
i s | | Gre
gor
ian
æ | Scal
iger
ian
æ | xiii
j. Gr
eg. | xiii
j. Sca
l. | Greg
oria
na
H. | Greg
oria
na
M. | Scali
geria
na
H. | Scali
geria
na
M. | Lite
ræ Do
m. Gre
gor. | Lite
ræ Do
m. Sca
lig. | mpt
i Cal.
Gre
g | mpt
i Cal.
Scal. |
| 2
9
1
0 | 4 | 28 | 0 | 15.
A | 13.
A | 15. | 7.A | 14. | 7.A | E | D | 20 | 19 |
| 2
9
1
9 | 1
3 | 7 | 9 | 6.A | 4.A | 6. | 5.A | 5. | 5.A | A | G | 20 | 19 |
| 2
9
5
7 | 1
3 | 7 | 9 | 6.A | 4.A | 5. | 14.A | 5. | 14.A | B | B | 20 | 20 |
| 2
9
9
5 | 1
3 | 7 | 9 | 6.A | 4.A | 5. | 23.A | 5. | 23.A | D | D | 20 | 20 |
| 3
0
1
4 | 1
3 | 7 | 9 | 6.A | 4.A | 6. | 16.A | 5. | 16.A | B | A | 21 | 20 |
| 3
0
3
3 | 1
3 | 7 | 9 | 6.A | 4.A | 6. | 8.A | 5. | 8.A | F | E | 21 | 20 |
| 3
0 | 1
3 | 7 | 9 | 6.A | 4.A | 6. | 17.A | 5. | 17.A | A | G | 21 | 20 |

| A
A u
n re
n u
i s | | Ep
act | Epa
ctæ | Lu
næ | Lu
næ | Pleni
l.
medi
a
Greg
oria
na
H. | Pleni
l.
medi
a
Greg
oria
na
M. | Pleni
l.
medi
a
Scali
geria
na
H. | Pleni
l.
medi
a
Scali
geria
na
M. | | | Die
s
exe
mpt
i
Cal.
Gre
g | Dies
exe
mpt
i
Cal.
Cal. |
|--------------------------------|--------|-----------|------------|----------|----------|--|--|--|--|---|---|---|---|
| 7
1 | | | | | | | | | | | | | |
| 3
1
1
9 | 4 | 27 | 28 | 16.
A | 14.
A | 16. | 21.A | 15. | 21.A | E | D | 22 | 21 |
| 3
1
3
8 | 4 | 27 | 28 | 16
A | 14.
A | 16. | 14.A | 15. | 14.A | B | A | 22 | 21 |
| 3
1
5
7 | 4 | 27 | 28 | 16.
A | 14.
A | 16. | 6.A | 15. | 6.A | F | E | 22 | 21 |
| 3
1
9
5 | 4 | 27 | 28 | 16.
A | 14.
A | 16. | 16.A | 15. | 16.A | A | G | 22 | 21 |
| 3
2
0
9 | 1
8 | 1 | 3 | 12.
A | 10.
A | 11. | 11.A | 11. | 11.A | D | D | 22 | 22 |
| 3
2
4
7 | 1
8 | 1 | 3 | 12.
A | 10.
A | 11. | 20.A | 11. | 20.A | F | F | 22 | 22 |

Calendar; the eighth, those same full moons according to Scaliger's intercalation. The ninth comprises the Dominical letters by the method of the Gregorian Calendar; the tenth offers the same letters by Scaliger's method. In the eleventh we have noted the days rejected according to the equation of the Gregorian Calendar, and in the twelfth, finally, the days removed according to Scaliger's equation. Now whenever your fourteenth moons run two days ahead of the mean oppositions, you must admit that you determine the epacts wrongly and set them out incorrectly in the Calendar — as was said above in the examination of the table of 19 years, from the year 1577 to the year 1595 [printed annum] — since it is falsely that the fourteenth moons are found by them. Furthermore, a full moon that falls on some day after noon must be assigned to the following day, as we also pointed out above. The calculation of the mean oppositions has been set up here, as elsewhere, by means of the tables of epacts that we compiled in the *Apologia*, lib. 2, cap. 6 (Clavius, *Apologia* II.6); and the calculation made by the new moons of 76 years, which Paul of Middelburg [Paulus Middelburgensis] presents, does not differ from it by much. We have amassed so many examples in this table and in those that follow, not so much to set the errors of the Scaligerian epacts before your eyes as to teach that the Gregorian epacts indicate the Paschal fourteenth moons correctly, as the Canons prescribe. This will be plainly evident if the Gregorian fourteenth moons are compared with the Gregorian mean full moons, and the Scaligerian fourteenth moons with the Scaligerian mean full moons.

In all these years — and I have passed over a good many more in which the same thing happens, for either there are examples enough, or I do not know what "enough" means — your fourteenth moons always run two days ahead of ours, and they fall very nearly the same number of days before the full moons, sometimes even three days before them (as in the years 2575, 2594, 2595). From this it follows that, if the next following day were a Sunday, Easter would have to be kept — on your epacts, and by the Church's prescription, since she always celebrates that festival on the first Sunday after the fourteenth moon, as we have shown more than once — one day before the full moon, and sometimes even two days before it. And not even you deny that this is contrary to the Canons and the decrees of the Fathers, since you ...

(The sentence breaks off at the foot of the text block; the two tables follow, and the argument resumes beyond this leaf.)

Second table (the first of the "tabellæ" just announced; it continues on the following page).

Column heads as printed: Anni Domini. | Aureus numerus. | Epactæ Gregorian. | Epactæ Scaligeria. | Lunæ xiiij. Greg. | Lunæ xiiij. Scali. | Plenilunia media secundum intercalationē Gregor. (sub-heads H. M.) | Plenilunia media secundum intercalationē Scalig. (sub-heads H. M.) | Litera Dom.Greg. | Litera Dom.Scalig. | Dies exempti Greg. | Dies exempti Scalig.

| A | n | Au | | | | Plenil. | Plenil. | Lit | Lite | Dies | |
|----|-----|------|-------|--------|--------|---------|---------|-----|------|------|-------|
| | ni | re | | | | media | media | | | | |
| D | us | Epa | Epac | Lun | Lun | sec. | sec. | era | ra | exe | Dies |
| o | nu | ctæ | tæ | æ | æ | interc | interc | Do | Do | mpt | exe |
| m | me | Gre | Scali | xiiij. | xiiij. | al. | al. | m. | m.S | i | mpti |
| in | rus | gori | geri | Gre | Scali | Grego | Scalig. | Gre | cali | Gre | Scali |
| i. | . | an. | a. | g. | . | r. H. | H. | g. | g. | g. | g. |
| 19 | 9 | 27 | 29 | 16.A | 13.A | 16. | 15. | B | A | 13 | 12 |
| 27 | | | | | | | | | | | |
| 19 | 9 | 27 | 29 | 16.A | 13.A | 16. | 15. | F | E | 13 | 12 |
| 46 | | | | | | | | | | | |
| 19 | 9 | 27 | 29 | 16.A | 13.A | 15. | 14. | C | B | 13 | 12 |
| 65 | | | | | | | | | | | |
| 22 | 9 | 26 | 28 | 17.A | 14.A | 17. | 16. | B | A | 15 | 14 |
| 31 | | | | | | | | | | | |
| 22 | 9 | 26 | 28 | 17.A | 14.A | 17. | 16. | F | E | 15 | 14 |
| 50 | | | | | | | | | | | |
| 25 | 1 | 27 | 29 | 16.A | 13.A | 16. | 16. | B | B | 17 | 17 |
| 46 | | | | | | | | | | | |
| 25 | 1 | 27 | 29 | 16.A | 13.A | 6. | 16. | F | F | 17 | 17 |
| 65 | | | | | | | | | | | |
| 26 | 18 | 3 | 6 | 10.A | 7.A | 9. | 8. | D | C | 18 | 17 |
| 01 | | | | | | | | | | | |
| 26 | 19 | 14 | 17 | 30. | 27.M | 29. | 28. | C | B | 18 | 17 |
| 02 | | | | M | | | | | | | |
| 26 | 1 | 26 | 29 | 17.A | 13.A | 17. | 16. | B | A | 18 | 17 |
| 03 | | | | | | | | | | | |
| 26 | 3 | 18 | 21 | 26. | 23.M | 26. | 25. | F | E | 18 | 17 |
| 05 | | | | M | | | | | | | |
| 26 | 4 | 29 | 2 | 14.A | 11.A | 14. | 13. | E | D | 18 | 17 |

| A
n
ni
D
o
m
in
i. | Au
re
us
nu
me
rus
. | Epa
ctæ
Gre
gori
an. | Epac
tæ
Scali
geri
a. | Lun
æ
xiiij.
Gre
g. | Lun
æ
xiiij.
Scali
. | Plenil.
media
sec.
interc
al.
Grego
r. H. | Plenil.
media
sec.
interc
al.
Scalig.
H. | Lit
era
Do
m.
Gre
g. | Lite
ra
Do
m.S
cali
g. | Dies
exe
mpt
i
Gre
g. | Dies
exe
mpti
Scali
g. |
|---|--|----------------------------------|-----------------------------------|---------------------------------|----------------------------------|---|--|-------------------------------------|---------------------------------------|--------------------------------------|------------------------------------|
| 06 | | | | | | | | | | | |
| 26
07 | 5 | 10 | 13 | 3.A | 31.M | 3. | 2. | D | C | 18 | 17 |
| 26
09 | 7 | 2 | 5 | 11.A | 8.A | 10. | 9. | A | G | 18 | 17 |
| 26
10 | 8 | 13 | 16 | 31.
M | 28.M | 31. | 30. | G | F | 18 | 17 |
| 26
11 | 9 | 24 | 27 | 18.A | 15.A | 19. | 18. | F | E | 18 | 17 |
| 26
13 | 11 | 16 | 19 | 28.
M | 25.M | 27. | 26. | C | B | 18 | 17 |
| 26
14 | 12 | 27 | 0 | 16.A | 13.A | 15. | 14. | B | A | 18 | 17 |
| 26
15 | 13 | 8 | 11 | 5 A | 2.A | 5. | 4. | A | G | 18 | 17 |
| 26
17 | 15 | * | 3 | 13.A | 10.A | 12. | 11. | E | D | 18 | 17 |
| 26
18 | 16 | 11 | 14 | 2.A | 30.M | 1. | 31. | D | C | 18 | 17 |
| 26
19 | 17 | 22 | 25 | 22.
M | 19.M | 22. | 21. | C | B | 18 | 17 |
| 26
21 | 19 | 14 | 17 | 30.
M | 27.M | 29. | 28. | G | F | 18 | 17 |
| 26
22 | 1 | 26 | 29 | 17.A | 13.A | 17. | 16. | F | E | 18 | 17 |
| 26
29 | 8 | 13 | 16 | 31
M | 28
M | 30. | 29. | D | C | 18 | 17 |
| 26 | 9 | 24 | 27 | 18.A | 15.A | 18. | 17. | C | B | 18 | 17 |

[illegible]

Column heads as printed: Anni Domini. | Aureus numerus. | Epactæ Gregorian. |
Epactæ Scaligeria. | Lunæ xiiij. Greg. | Lunæ xiiij. Scali. | Plenilunia media
secundum intercalationẽ Gregor. (sub-heads H. M.) | Plenilunia media secundum
intercalationẽ Scalig. (sub-heads H. M.) | Litera Dom.Greg. | Litera Dom.Scalig.
| Dies exempti Greg. | Dies exempti Scalig.

| A
n
D
o
m
i
n
i. | Au
re
nu
me
rus
. | Epa
ctæ
Gre
gori
an. | Epac
tæ
Scali
geri
a. | Lun
æ
xiiiij.
Gre
g. | Lun
æ
xiiiij.
Scali
. | Plenil.
media
sec.
interc
al.
Grego
r. H. | Plenil.
media
sec.
interc
al.
Scalig.
H. | Lit
era
Do
m.
Gre
g. | Lite
ra
Do
m.S
cali
g. | Dies
exe
mpt
i
Gre
g. | Dies
exe
mpti
Scali
g. |
|---------------------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|---|--|-------------------------------------|---------------------------------------|--------------------------------------|------------------------------------|
| 26
38 | 17 | 22 | 25 | 22.
M | 19.M | 21. | 20. | G | F | 18 | 17 |
| 26
39 | 18 | 3 | 6 | 10.A | 7.A | 9. | 8. | F | E | 18 | 17 |
| 26
41 | 1 | 26 | 29 | 17.A | 3.A | 17. | 16. | C | B | 18 | 17 |
| 26
42 | 2 | 7 | 10 | 6.A | 3.A | 6. | 5. | B | A | 18 | 17 |
| 26
43 | 3 | 18 | 21 | 26.
M | 23.M | 26. | 25. | A | G | 18 | 17 |
| 26
45 | 5 | 10 | 13 | 3.A | 31.M | 3. | 2. | E | D | 18 | 17 |
| 26
46 | 6 | 21 | 24 | 23.
M | 20.M | 23. | 22. | D | C | 18 | 17 |
| 26
47 | 7 | 2 | 5 | 11.A | 8.A | 11. | 10. | C | B | 18 | 17 |
| 26
49 | 9 | 24 | 27 | 18.A | 15.A | 18. | 17. | G | F | 18 | 17 |
| 26
50 | 10 | 5 | 8 | 8.A | 5.A | 7. | 6. | F | E | 18 | 17 |
| 26
51 | 11 | 16 | 19 | 28.
M | 25.M | 28. | 27. | E | D | 18 | 17 |
| 26
53 | 13 | 8 | 11 | 5.A | 2.A | 4. | 3. | B | A | 18 | 17 |
| 26
54 | 14 | 19 | 22 | 25.
M | 22.M | 24. | 23. | A | G | 18 | 17 |
| 26
55 | 15 | * | 3 | 13.A | 10.A | 12. | 11. | G | F | 18 | 17 |

| A
n
ni
D
o
m
in
i. | Au
re
us
nu
me
rus
. | Epa
ctæ
Gre
gori
an. | Epac
tæ
Scali
geri
a. | Lun
æ
xiii.
Gre
g. | Lun
æ
xiii.
Scali
. | Plenil.
media
sec.
interc
al.
Grego
r. H. | Plenil.
media
sec.
interc
al.
Scalig.
H. | Lit
era
Do
m.
Gre
g. | Lite
ra
Do
m.S
cali
g. | Dies
exe
mpt
i
Gre
g. | Dies
exe
mpti
Scali
g. |
|---|--|----------------------------------|-----------------------------------|--------------------------------|---------------------------------|---|--|-------------------------------------|---------------------------------------|--------------------------------------|------------------------------------|
| 26
58 | 18 | 3 | 6 | 10.A | 7.A | 9. | 8. | C | B | 18 | 17 |
| 26
59 | 19 | 14 | 17 | 30.
M | 27
M | 29. | 28. | B | A | 18 | 17 |
| 26
61 | 2 | 7 | 10 | 6.A | 3.A | 6. | 5. | F | E | 18 | 17 |
| 26
62 | 3 | 18 | 21 | 26.
M | 23.M | 26. | 25. | E | D | 18 | 17 |
| 26
63 | 4 | 29 | 2 | 14.A | 11.A | 14. | 13. | D | C | 18 | 17 |
| 26
65 | 6 | 21 | 24 | 23.
M | 20.M | 23. | 22. | A | G | 18 | 17 |
| 26
66 | 7 | 2 | 5 | 11.A | 8.A | 11. | 10. | G | F | 18 | 17 |
| 26
67 | 8 | 13 | 16 | 31.
M | 28
M | 31. | 30. | F | E | 18 | 17 |
| 26
69 | 10 | 5 | 8 | 8.A | 5.A | 7. | 6. | C | B | 18 | 17 |
| 26
70 | 11 | 16 | 19 | 28.
M | 25.M | 20. | 27. | B | A | 18 | 17 |
| 26
71 | 12 | 27 | 0 | 16.A | 13.A | 15. | 14. | A | G | 18 | 17 |
| 29
07 | 1 | 25 | 27 | 18.A | 15.A | 18. | 17. | B | A | 20 | 19 |
| 29
18 | 12 | 26 | 28 | 17.A | 14.A | 16. | 15. | B | A | 20 | 19 |
| 29
26 | 1 | 25 | 27 | 18.A | 15.A | 18. | 17. | F | E | 20 | 19 |

| A
n
ni
D
o
m
in
i. | Au
re
us
nu
me
rus
. | Epa
ctæ
Gre
gori
an. | Epac
tæ
Scali
geri
a. | Lun
æ
xiii.
Gre
g. | Lun
æ
xiii.
Scali
. | Plenil.
media
sec.
interc
al.
Grego
r. H. | Plenil.
media
sec.
interc
al.
Scalig.
H. | Lit
era
Do
m.
Gre
g. | Lite
ra
Do
m.S
cali
g. | Dies
exe
mpt
i
Gre
g. | Dies
exe
mpti
Scali
g. |
|---|--|----------------------------------|-----------------------------------|--------------------------------|---------------------------------|---|--|-------------------------------------|---------------------------------------|--------------------------------------|------------------------------------|
| 29
37 | 12 | 26 | 28 | 17.A | 14.A | 16. | 15. | F | E | 20 | 19 |
| 29
45 | 1 | 25 | 27 | 18.A | 15.A | 18. | 18. | C | C | 20 | 20 |
| 29
75 | 12 | 26 | 28 | 17.A | 14.A | 16. | 16. | A | A | 20 | 20 |
| 29
83 | 1 | 25 | 27 | 18.A | 15.A | 18. | 18. | E | E | 20 | 20 |
| 29
94 | 12 | 26 | 28 | 17.A | 14.A | 16. | 16. | E | E | 20 | 20 |
| 30
02 | 1 | 25 | 27 | 18.A | 15.A | 18. | 17. | C | B | 21 | 20 |
| 30
13 | 12 | 26 | 28 | 17.A | 14.A | 16. | 15. | C | B | 21 | 20 |
| 30
21 | 1 | 25 | 27 | 18.A | 15.A | 17. | 16. | G | F | 21 | 20 |
| 30
51 | 12 | 26 | 28 | 17.A | 14.A | 16. | 15. | E | D | 21 | 20 |
| 30
59 | 1 | 25 | 27 | 18.A | 15.A | 18. | 17. | B | A | 21 | 20 |
| 30
70 | 12 | 26 | 28 | 17.A | 14.A | 17. | 16. | B | A | 21 | 20 |
| 32
14 | 4 | 27 | 29 | 16.A | 13.A | 16. | 16. | E | E | 22 | 22 |
| 32
33 | 4 | 27 | 29 | 16.A | 13.A | 16. | 16. | B | B | 22 | 22 |
| 32
71 | 4 | 27 | 29 | 16.A | 13.A | 16. | 16. | D | D | 22 | 22 |

| A
n
ni
D
o
m
in
i. | Au
re
us
nu
me
rus
. | Epa
ctæ
Gre
gori
an. | Epac
tæ
Scali
geri
a. | Lun
æ
xiiij.
Gre
g. | Lun
æ
xiiij.
Scali
. | Plenil.
media
sec.
interc
al.
Grego
r. H. | Plenil.
media
sec.
interc
al.
Scalig.
H. | Lit
era
Do
m.
Gre
g. | Lite
ra
Do
m.S
cali
g. | Dies
exe
mpt
i
Gre
g. | Dies
exe
mpti
Scali
g. |
|---|--|----------------------------------|-----------------------------------|---------------------------------|----------------------------------|---|--|-------------------------------------|---------------------------------------|--------------------------------------|------------------------------------|
| 32
90 | 4 | 27 | 29 | 16.A | 13.A | 16. | 16. | A | A | 22 | 22 |
| 33
09 | 4 | 27 | 29 | 16.A | 13.A | 15. | 14. | F | E | 23 | 22 |
| 47
02 | 10 | 26 | 28 | 17.A | 14.A | 17. | 16. | E | D | 34 | 33 |
| 47
21 | 10 | 26 | 28 | 17.A | 14.A | 17. | 16. | B | A | 34 | 33 |
| 47
59 | 10 | 26 | 28 | 17.A | 14.A | 17. | 16. | D | C | 34 | 33 |
| 47
78 | 10 | 26 | 28 | 17.A | 14.A | 17. | 16. | A | G | 34 | 33 |
| 47
97 | 10 | 26 | 28 | 17.A | 14.A | 16. | 15. | E | D | 34 | 33 |

you do at least permit it to be celebrated on the full moon itself. Indeed, even if Easter had to be celebrated after Luna xv. — the position you cling to tenaciously along with Mæstlino — it could still be celebrated on the full moon itself, which you refuse to allow, or even, against the Canons, before the full moon. It is clear, then, that your epacts are neither correctly arranged in the Calendar nor correctly traced from your table, since their fourteenth days run ahead of the mean oppositions by more than they should. This error is admittedly corrected in most cases by the current Dominical letter, which very often follows the fourteenth day by more than two days; but that does not mean the epacts are not to be judged faulty in themselves. What is more, if we used your Calendar, we should in actual fact more than once celebrate Easter after Luna xiiij. — which is the Church's ancient practice — and yet before the full moon. This would happen in the years 1737. 1791 1859.1957.2575.2995.3195.3266. For in all of these the proper Dominical letter immediately follows your Luna xiiij., whereas the mean opposition does not immediately follow it; and in the year 2575. Easter would run

two days ahead of the mean opposition. And if you argue that Easter must be celebrated after Luna xv. so that it does not fall on the full moon — a claim for which you cannot produce a single authority with any competence in this business — you will be unable to escape presenting Easter for celebration on the full moon itself in the years 1734. 1802.2238.2519.3033.3138.3209. The same will happen even if Easter is celebrated after Luna xiiij., as reason requires, because in these years the Dominical letter follows Luna xiiij. by two days, on the full moon itself. But with us this is no offence, since we know that by the Canons Easter may be celebrated on the full moon; it is an offence on your side, since you deny that it may be done. Furthermore, in those eight years listed above — 1737. 1791.1859.1957.2575.2995.3195. 3266. — unless you rule that Easter is to be celebrated on Luna xv., as the Canons and the decrees of the Fathers prescribe, you will defer it to Luna xxij., against every writer on the computus, against the councils, and against the canons.

But here are another 80. years for you, in which greater errors are committed, since in them your Lunæ xiiij. anticipate ours by three days, and sometimes even four.

In all of these years — and I have passed over many more in which the same thing happens, so as not to seem bent on burying you under a multitude of examples — your Lunæ xiiij. always run three days ahead of ours, and they fall before the mean oppositions by very nearly the same number of days, sometimes even by four (as in the years 2546.2565.2603.2611.2622.2945.2983.3214.3233.3271.3290.), and only rarely by no more than two. So if the next day — that is, your Luna xv. — happens to be a Sunday, then by your epacts, and by the Canons and the practice of the Church, Easter will be celebrated one or two days, and sometimes even three, before the mean full moon. That is utterly absurd, and unheard of. And if it could not be celebrated on the full moon, as you wrongly suppose, but only after Luna xv., then even so, if the day following Luna xv. were a Sunday, it would be celebrated either on the full moon itself — which you will not have — or one day, or even two days, before the full moon, against the Canons. You see, then, how wrongly your epacts are placed in the Calendar, epact 29. having been moved from 1 April to 31. March, and so on; and how falsely your table of the true period supplies them. You see this whole structure of yours shaken and collapsing of its own accord. Nor does the matter stop there. Your epacts not only fail in themselves to give us a legitimate Easter; they very often actually force upon us an Easter kept against the Canons and the decrees of the Fathers. For if Easter is to be kept after Luna xiiij. of the cycle, as is right and as the Canons direct, then in the year 2565.

it will be kept three days before the mean opposition; in the year 2650. one day; likewise in the year 2670.; and in the years 2606.2907.3059.4778. two days. What could be more inept? And if, as you wrongly hold, Easter had to be kept after Luna xv., then in those same years it would be deferred to Luna xxij. of the cycle — which the Canons forbid. Next, in the years 2231.2603.2630.2643.2647.2667.2945.2975.3002.3290. Easter will run one day ahead of the mean opposition, and that after Luna xv. of the cycle; while in the years 2610.2613.2617.2637.2661.2671.2918.3070.4721. it will be celebrated on the full moon itself, and indeed on Luna xv. of your own epacts — something you shudder at without cause. Further — see how far I am willing to go — in the year 2619., in which your epact is xxv., there will be no legitimate Easter at all. Why so? Because in March this epact is not the Paschal one, since it occupies 6 March; it is Paschal in April, setting its fourteenth day on 17 April. Now since by your equation the mean opposition falls on 19 April at hour 17. — that is, on the 20th day — it will not be the Paschal opposition, since it comes after the 19th; rather the March opposition, falling on the 21st day at hour 4. — that is, on the 22nd day — will be the Paschal one. So Scaliger will be forced that year to keep Easter in the second month, and wrongly at that, since his Luna xiiij., falling on 17 April, runs three days ahead of the opposition. That is faulty, because on its own terms Easter, coming after Luna xiiij., could be kept on the 18th if that day were a Sunday — two days before the full moon; or, as his own opinion has it, after Luna xv. on the 19th if that were a Sunday — one day before the full moon. How much more correctly, then, does our epact XXII. for that year, setting its XIV. on 22 March, present Easter in the first month, since by our equation the March opposition occurs on 22 March at hour 4., that is, after the equinox? What could be more correct? And this error will not attend your table only once: precisely the same thing will happen in the year 2638. For again your epact will be XXV., whose Paschal XIV. holds 17 April; and yet the April opposition, falling on the 19th at hour 10., is not the right one, since it must be assigned to the 20th, after the 19th — and your XIV. precedes it by three days. How much better, then, does our epact XXII. for that year set out Easter, placing Luna XIV. on 22 March, since by our equation the opposition occurs on 22 March, after the equinox, and so belongs to the first month? In the year 2646., however, your epact will be 2 4., and, as you would have it, the Paschal one in March. Now since the March full moon then occurs on the 2 2nd at hour 9. — that is, on the 2 3rd — your XV. will fall on 21 March, running two days ahead of the full moon. That will not serve, if Easter is not to be liable to be celebrated before the full moon. But our epact that year will be XXI., whose XIV. is marked on 23 March, one day before the full moon, which for us falls on the 2 3rd day at hour 9. What could be more accurate? Do you see

how much more happily matters stand with our epacts and our equation? Nor does the error of your table stop here; it creeps further. You make epact 24. the Paschal one in March, which is an outright novelty, since not one of the writers, nor of the Fathers, has ever brought 7 March — the day set opposite epact 24. — within the limits of the Paschal new moons that are traced by the numbers of the cycle. How much more correctly does our table put the same epact [?] back in April! Let us consider, if you please, the following 16. years, in which each of us employs epact XXIV.

Do you not see that you keep Easter in the 12. month, while we keep it in the first? For your full moons in March all come before 22 March, and so the true Lunæ xiiij. fall before the day of the equinox; whereas ours in April do not go past 19 April, and so the true Lunæ xiiij. do not pass beyond the 18th. Now it is agreed among writers on the computus that the Paschal full moons are contained within one or another of the 29. days counted from 22 March inclusive to 19 April inclusive. From this it follows that those which come before 22 March belong to the last

[printed page number 46]

Table of the sixteen years in which both parties use epact XXIV (the *sequentes 16. annos* announced at the end of the preceding leaf). The table stands at the head of the page; the prose resumes beneath it.

Column heads as printed: Anni Domini | Aur. numerus. | Ep. Cal. Greg. | Epactæ Scalig. | Lunæ xiiij. Greg. | Lunæ xiiij. Scalig. | Dies exēpti sec. æquat. Greg. | Dies exēpti sec. æquat. Greg. (the second panel repeats *Greg.*; the parallel table of the preceding leaves heads it *Scalig.*) | Plenilunia media Pasc. secundum intercalationē Greg. (sub-heads D. H.) | Plenilunia media Pasc. secundum intercalationē Scali. (sub-heads D. H.)

| A
n
ni
D
o
m
in
i | A
ur
. Ep
nu . Ep
m Ca act
er l. æ
us Gr Sca
. eg. lig. | | | Lun
æ
xiiij.
Gre
g. | Lun
æ
xiiij.
Scali
g. | Dies
exēpti
sec.
æquat
. Greg. | Dies
exēpti
sec.
æquat
. Greg. | Plenil
.
medi
a
Greg.
D. | Plenil
.
medi
a
Greg.
H. | Plenil.
media
Scali.
D. | Plenil.
media
Scali.
H. |
|--|---|----|----|---------------------------------|-----------------------------------|--|--|---|---|----------------------------------|----------------------------------|
| 1
6 | 14
24 | 24 | 24 | 18.
A | 20.
M | 10 | 10 | 18. | 13. A | 20. | 0. M |

| Anni Domini | Annus | Episcopus | Episcopus | Lunæ | Lunæ | Dies exēpti | Dies exēpti | Plenil. | Plenil. | Plenil. | Plenil. |
|-------------|---------|-----------|-----------|------------------|--------------------|-------------------|-------------------|------------------|------------------|-----------------|-----------------|
| | numerus | Calend. | Actus | æxiiiij. Gre. g. | æxiiiij. Scali. g. | sec. æquat. Greg. | sec. æquat. Greg. | medi. a Greg. D. | medi. a Greg. H. | media Scali. D. | media Scali. H. |
| 09 | | | | | | | | | | | |
| 1628 | 14 | 24 | 24 | 18. A | 20. M | 10 | 10 | 18. | 6. A | 19. | 17. M |
| 1647 | 14 | 24 | 24 | 18. A | 20. M | 10 | 10 | 18. | 22. A | 20. | 10. M |
| 1666 | 14 | 24 | 24 | 18. A | 20. M | 10 | 10 | 18. | 15. A | 20. | 2. M |
| 1685 | 14 | 24 | 24 | 18. A | 20. M | 10 | 10 | 18. | 7. A | 19. | 19. M |
| 1727 | 17 | 24 | 24 | 18. A | 20. M | 15 | 15 | 18. | 7. A | 19. | 19. M |
| 1796 | 17 | 24 | 24 | 18. A | 20. M | 15 | 15 | 18. | 0. A | 19. | 11. M |
| 1824 | 17 | 24 | 24 | 18. A | 20. M | 16 | 16 | 18. | 20. A | 20. | 7. M |

| A
n
ni
D
o
m
in
i | A
ur
. nu
Ep
. Ca
l. Gr
eg. | Ep
act
æ
Sca
lig. | Lun
æ
xiiij.
Gre
g. | Lun
æ
xiiij.
Scali
g. | Dies
exēpti
sec.
æquat
. Greg. | Dies
exēpti
sec.
æquat
. Greg. | Plenil
.
medi
a
Greg.
D. | Plenil
.
medi
a
Greg.
H. | Plenil.
media
Scali.
D. | Plenil.
media
Scali.
H. | |
|--|---|-------------------------------|---------------------------------|-----------------------------------|--|--|---|---|----------------------------------|----------------------------------|-------|
| 9 | | | | | | | | | | | |
| 2
4
4
8 | 17 | 24 | 24 | 18.
A | 20.
M | 16 | 16 | 18. | 12. A | 19. | 23. M |
| 2
4
8
6 | 17 | 24 | 24 | 18.
A | 20.
M | 16 | 16 | 18. | 21. A | 20. | 8. M |
| 3
4
8
8 | 12 | 24 | 24 | 18.
A | 20.
M | 24 | 24 | 18. | 12. A | 20. | 0 M |
| 4
1
5
6 | 15 | 24 | 24 | 18.
A | 20.
M | 29 | 29 | 18. | 6. A | 19. | 18. M |
| 4
1
7
5 | 15 | 24 | 24 | 18.
A | 20.
M | 29 | 29 | 18. | 23. A | 20. | 10. M |
| 4
1
9
4 | 15 | 24 | 24 | 18.
A | 20.
M | 29 | 29 | 18. | 16. A | 20. | 3. M |
| 4
5
6
6 | 7 | 24 | 24 | 18.
A | 20.
M | 32 | 32 | 18. | 22. A | 20. | 9. M |

| | | | | | | | | | | | | |
|----|----|-----|------|--------|--------|---------|---------|--------|--------|---------|---------|--|
| A | A | | | | | | | | | | | |
| n | ur | | | | | | | | | | | |
| ni | . | Ep | | | | | | Plenil | Plenil | | | |
| D | nu | . | Ep | Lun | Lun | Dies | Dies | . | . | | | |
| o | m | Ca | act | æ | æ | exēpti | exēpti | medi | medi | Plenil. | Plenil. | |
| m | er | l. | æ | xiiij. | xiiij. | sec. | sec. | a | a | media | media | |
| in | us | Gr | Sca | Gre | Scali | æquat | æquat | Greg. | Greg. | Scali. | Scali. | |
| i | . | eg. | lig. | g. | g. | . Greg. | . Greg. | D. | H. | D. | H. | |
| 4 | 7 | 24 | 24 | 18. | 20. | 32 | 32 | 18. | 14. A | 20. | 1. M | |
| 5 | | | | A | M | | | | | | | |
| 8 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |

month, and those which pass beyond 19 April belong to the second. Do you see, then, most learned Scaliger, what a forest of errors in the Paschal new moons emerges in this table of ours out of your epacts and that new Canon of yours? I come now to another kind of error, and no light one.

In the tables above, the Lunæ xiiij. of the Scaligerian method always run ahead of the Lunæ xiiij. of the Gregorian Calendar by two or three days, sometimes even by four. Let us now see, if you please, most learned Scaliger, whether your table for the true tropical period ever also offers us Lunæ xiiij. that fall later than the Gregorian ones. For if that happens, your equation will be caught out as faulty and false on every side. So let us consider the following 58. years, in which the Scaligerian epacts are two less than the Gregorian and therefore mark the new moons and the fourteenth days in the Calendar two days later — unless the epact concerned is one of these five, 25.26.27.28.29., for these show them only one day later, since in your Calendar they have been moved up by one day.

Here, first of all, I am utterly astonished: what came into your mind, most learned Scaliger, to push the new moons a full two days toward the ends of the months from the year 3609. as far as the year 3745., when only one day was rejected from the year 3608.? For on account of one day removed the new moons are compelled to descend by one day in the Calendar, not by two — unless you are willing to say that those same new moons from the year 2477. to the year 3609., which its epacts marked two days earlier, were false. I do not believe you will say that, for fear your table of the true tropical period should collapse from the foundations. And no less remarkable does it seem to me that in the next 132. years following — that is, from the year 3745. to the year 3877. — you drive those same new moons back again by two days toward the beginnings of the months. For on account of the

day taken away from the year 3744., if the Moon needs no equation the new moons ought to descend by one day and not to ascend by two; while if it does need an equation, they ought to stay on the same day, as the theory of the new moons requires and as we have written more fully in the *Apologia*, book 2, chapter 4 (*Apologia* II.4). And if in these 132. years the new moons are correctly marked, it must follow that in the preceding 136. years the same new moons were wrongly indicated two days late. But I see that in placing the new moons you took no account of the equation of the solar and of the lunar year, but only of the Jewish new moons [Neomeniæ Iudaicæ] — and that has been the cause of all your troubles, as I have partly shown already and shall shortly show further. Let us therefore examine your Lunæ XIV. — for these must be weighed more carefully than the new moons, because of the solemnity of Easter, and on your own authority at that — and let us compare them with the fourteenth days of the Gregorian Calendar, so that the attentive reader may recognize how much more correctly and aptly the epacts are placed in the Gregorian Calendar, and their equation established, than in the Scaligerian. This is precisely what we have done in the preceding table. There it is plainly to be seen that the Lunæ XIV. of the Gregorian Calendar always run one day ahead of the mean oppositions, just as in the tables above. What could be devised more exactly right in this business? And that Scaliger's Lunæ XIV. almost always follow the mean oppositions by two days. What could be brought forward more foreign to a correct celebration of Easter? The result is that in every year of the next table Easter is kept duly and lawfully according to the prescription of the Gregorian Calendar — that is, on the Sunday next after Luna XIV., as the Canons direct — whereas by Scaliger's method it usually falls in the fourth week, namely on Luna XXII., XXIII., and XXIV., which the Canons in no way allow. For example: in the year 3609. the Gregorian Calendar sets Easter on 5 April, that is, on the Sunday next after Luna XIV. But the Scaligerian Easter is thrown forward to 12. April, that is, to the Sunday next after its own Luna XV., and so onto Luna XXIV. — and further still, since Luna XV., or the opposition, occurs on about the 3rd day. Likewise in the year 3612. the Gregorian Easter will fall on the first day of April, but the Scaligerian on 8 April — Luna XXIV. And the same must be said of very many other years in the same table.

Table of the fifty-eight years in which the Scaligerian epacts are two less than the Gregorian (the *insequentes 58. annos* announced on the preceding leaf: A.D. 3609–3699). The table fills the whole page; no prose accompanies it.

Column heads as printed: Anni Domini. | Aur. numerus. | Epactæ Greg. | Epactæ Scalig. | Lunæ xiiij. Greg. | Lunæ xiiij. Scalig. | Dies exēpti iuxta vtriusque

intercalationem. | Plenilunia media iuxta vtiusque intercalationem. (sub-
heads D. H.) | Litera Dom.

| Ann
i
Do
min
i. | Aur.
num
er
us
. | Epac
tæ
Greg
. | Epact
æ
Scalig
. | Lunæ
xiiij.
Greg. | Lunæ
xiiij.
Scalig. | Dies
exēpti
iuxta
vtiusque
intercalat. | Plenil.
media
D. | Plenil.
media
H. | Lit
era
Do
m. |
|-----------------------------|------------------------------|-------------------------|---------------------------|-------------------------|---------------------------|--|------------------------|------------------------|------------------------|
| 360
9 | 19 | 11 | 9 | 2. A | 4. A | 25 | 2. | 7. A | D |
| 361
2 | 3 | 15 | 13 | 29. M | 31. M | 25 | 29. | 22. M | AG |
| 361
3 | 4 | 26 | 24 | 17. A | 20. M | 25 | 17. | 19. A | F |
| 361
5 | 7 | 29 | 27 | 14. A | 15. A | 25 | 14. | 11. A | CB |
| 361
7 | 8 | 10 | 8 | 3. A | 5. A | 25 | 3. | 19. A | A |
| 362
0 | 11 | 13 | 11 | 31. M | 2. A | 25 | 31. | 11. M | ED |
| 362
1 | 12 | 24 | 22 | 18. A | 22. M | 25 | 12. | 8. A | C |
| 362
2 | 13 | 5 | 3 | 8. A | 10. A | 25 | 8: | 17. A | B. |
| 362
4 | 15 | 27 | 25 | 16. A | 17. A | 25 | 15. | 23. A | GF |
| 362
5 | 16 | 8 | 6 | 5. A | 7. A | 25 | 5. | 8. A | E |
| 362
6 | 17 | 19 | 17 | 25. M | 27. M | 25 | 25. | 17. M | D |
| 362
8 | 19 | 11 | 9 | 2. A | 4. A | 25 | 1. | 23. A | BA |
| 363
2 | 4 | 26 | 24 | 17. A | 20. M | 25 | 17. | 12. A | DC |
| 363
3 | 5 | 7 | 5 | 6. A | 8. A | 25 | 6. | 21. A | B |

| Ann
i
Do
min
i. | Aur.
num
erus
. | Epac
tæ
Greg
. | Epact
æ
Scalig
. | Lunæ
xiiij.
Greg. | Lunæ
xiiij.
Scalig. | Dies
exēpti
iuxta
vtriusque
intercalat. | Plenil.
media
D. | Plenil.
media
H. | Lit
era
Do
m. |
|-----------------------------|--------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---|------------------------|------------------------|------------------------|
| 363
6 | 8 | 10 | 8 | 3. A | 5. A | 25 | 3. | 12. A | FE |
| 363
7 | 9 | 21 | 19 | 23. M | 25. M | 25 | 23. | 21. M | D |
| 363
8 | 10 | 2 | 0 | 11. A | 13. A | 25 | 11. | 18. A | C |
| 364
0 | 12 | 24 | 22 | 18. A | 22. M | 25 | 19. | 1. A | AG |
| 364
1 | 13 | 5 | | 8. A | 10. A | 25 | 8. | 9. A | F |
| 364
2 | 14 | 16 | 14 | 28. M | 30. M | 25 | 28. | 18. M | E |
| 364
4 | 16 | 8 | 6 | 5. A | 7. A | 25 | 5. | 1. A | CB |
| 364
5 | 17 | 19 | 17 | 25. M | 27. M | 25 | 25. | 9. M | A |
| 364
7 | 19 | 11 | 9 | 2. A | 4. A | 25 | 2. | 16. A | F |
| 364
8 | 1 | 23 | 21 | 2. M | 23. M | 25 | 22. | 0. M | ED |
| 364
9 | 2 | 4 | 2 | 9. A | 11. A | 25 | 9. | 23. A | C |
| 365
2 | 5 | 7 | 5 | 6. A | 8. A | 25 | 6, | 13. A | GF |
| 365
3 | 6 | 18 | 16 | 26. M | 28. M | 25 | 26. | 22. M | E |
| 365
6 | 9 | 21 | 19 | 23. M | 25. M | 25 | 23. | 13. M | BA |
| 365
7 | 10 | 2 | 0 | 11. A | 13. A | 25 | 11. | 11. A | G |
| 365 | 11 | 13 | 11 | 31. M | 2. A | 25 | 31. | 20. M | F |

| Ann
i
Do
min
i. | Aur.
num
erus
. | Epac
tæ
Greg
. | Epact
æ
Scalig
. | Lunæ
xiiij.
Greg. | Lunæ
xiiij.
Scalig. | Dies
exēpti
iuxta
vtriusque
intercalat. | Plenil.
media
D. | Plenil.
media
H. | Lit
era
Do
m. |
|-----------------------------|--------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---|------------------------|------------------------|------------------------|
| 8 | | | | | | | | | |
| 366
0 | 13 | 5 | 3 | 8. A | 10. A | 25 | 8. | 2. A | DC |
| 366
1 | 14 | 16 | 14 | 28. M | 30. M | 25 | 28. | 11. M | B |
| 366
3 | 16 | 8 | 6 | 5. A | 7. A | 25 | 5. | 17. A | G |
| 366
4 | 17 | 19 | 17 | 25. M | 27. M | 25 | 25. | 2. M | FE |
| 366
6 | 19 | 11 | 9 | 2. A | 4. A | 25 | 2. | 8. A | C |
| 366
8 | 2 | 4 | 2 | 9. A | 11. A | 25 | 9. | 15. A | AG |
| 366
9 | 3 | 15 | 13 | 29. M | 31. M | 25 | 29. | 23. M | F |
| 367
2 | 6 | 18 | 16 | 26. M | 28. M | 25 | 26. | 15. M | CB |
| 367
4 | 8 | 10 | 8 | 3. A | 5. A | 25 | 3. | 21. A | G |
| 367
6 | 10 | 2 | 0 | 11. A | 13. A | 25 | 11. | 3. A | ED |
| 367
7 | 11 | 13 | 11 | 31. M | 2. A | 25 | 31. | 12. M | C |
| 367
8 | 12 | 24 | 22 | 18. A | 22. M | 25 | 19. | 10. A | B |
| 367
9 | 13 | 5 | 3 | 8. A | 10. A | 25 | 8. | 19. A | A |
| 368
0 | 14 | 16 | 14 | 28. M | 30. M | 25 | 28. | 3. M | GF |

| Ann
i
Do
min
i. | Aur.
num
erus
. | Epac
tæ
Greg
. | Epact
æ
Scalig
. | Lunæ
xiiij.
Greg. | Lunæ
xiiij.
Scalig. | Dies
exēpti
iuxta
vtriusque
intercalat. | Plenil.
media
D. | Plenil.
media
H. | Lit
era
Do
m. |
|-----------------------------|--------------------------|-------------------------|---------------------------|-------------------------|---------------------------|---|------------------------|------------------------|------------------------|
| 368
2 | 16 | 8 | 6 | 5. A | 7. A | 25 | 5. | 10. A | D |
| 368
3 | 17 | 19 | 17 | 25. M | 27. M | 25 | 25. | 19. M | C |
| 368
4 | 18 | * | 28 | 13. A | 14. A | 25 | 12. | 16. A | BA |
| 368
5 | 19 | 11 | 9 | 2. A | 4. A | 25 | 2. | 1. A | G |
| 368
8 | 3 | 15 | 13 | 29. M | 31. M | 25 | 29. | 16. M | DC |
| 369
0 | 5 | 7 | 5 | 6. A | 8. A | 25 | 6. | 22. A | A |
| 369
2 | 7 | 29 | 27 | 14. A | 15. A | 25 | 14. | 5. A | FE |
| 369
3 | 8 | 10 | 8 | 3. A | 5. A | 25 | 3. | 14. A | D |
| 369
4 | 9 | 21 | 19 | 23. M | 25. M | 25 | 23. | 22. M | C |
| 369
5 | 10 | 2 | 0 | 11. A | 13. A | 25 | 11. | 20. A | B |
| 369
6 | 11 | 13 | 11 | 31. M | 2. A | 25 | 31. | 5. M | AG |
| 369
7 | 12 | 24 | 22 | 18. A | 22. M | 25 | 19. | 2. A | F |
| 369
8 | 13 | 5 | 3 | 8. A | 10. A | 25 | 8. | 11. A | E |
| 369
9 | 14 | 16 | 14 | 8. M | 30. M | 25 | 28. | 20 M | D |

D E I N D E — next, in the years 3613. 3621. 3632. 3640. 3678. 3697., Scaliger's method will put Easter in the last month, since in those years the mean full moon falls not after the equinox but almost always before it, as the table set out below shows. That certainly cannot be excused, and must be judged a very grave error.

| Anni
Domi
ni. | Au
r.
nu
m. | Epac
t.
Scal. | Lunæ xiiij.
Scaliger. | Plenilunia
media. D. | M
e
n
r
. | Pafca
Scaligeri
poft eius
Lunam xv. | M
e
n
r
. | Litera
Dominica
lis. |
|---------------------|----------------------|---------------------|--------------------------|-------------------------|-----------------------|--|-----------------------|----------------------------|
| 3613 | 4 | 24 | 20. M | 19. | M | 24. | M | F |
| 3621 | 12 | 22 | 22. M | 20. | M | 28. | M | C |
| 3632 | 4 | 24 | 20. M | 18. | M | 28. | M | DC |
| 3640 | 12 | 22 | 22. M | 20. | M | 25. | M | ·A G |
| 3678 | 12 | 22 | 22. M | 20. | M | 27. | M | B |
| 3697 | 12 | 22 | 22. M | 20. | M | 24. | M | F |

But perhaps you will say: What? Does your method avoid every error? I admit that in the years 3621. 3678. 3697. the mean April oppositions, on our scheme of intercalation, fall on the 19th a little after midday, as the table above establishes, so that they appear to belong to the second month rather than the first. Yet since the mean oppositions in the month of March come before the equinox, and therefore cannot belong to the first month, the Gregorian Calendar more correctly takes for its Paschal oppositions the ones that occur in the month of April. The reason is that it is a lesser fault to celebrate Easter in the second month than in the last, since the latter is expressly forbidden while the former is allowed. And this error — if it should be called an error at all, when it cannot be avoided — does not arise from any defect in the cycle. It arises because in the years just named no mean opposition falls on any of the 29. days from 22. March inclusive to 19. April inclusive, which are the only days assigned to the Paschal full moons; so that neither the March nor the April opposition turns out to be Paschal, the first belonging to the last month and the second to the second month. Since, then, one of the two must be taken if we wish to celebrate Easter in those years, it will be better, as we have said, to choose the opposition in April than the one in March. You see, then, most learned Scaliger, that your celebrated method of the Jewish new moons lies undone by this defect. And if that does not move you to hate it, you are welcome to love it — with no rival.

T R I A — three things, I think, are plainly established by what has been said. First, that Scaliger — an extraordinary thing in so gifted a man — has in this

critique of his brought no objection against us that is in any way new, has produced practically nothing that we had not foreseen long beforehand in the commission on the reform of the Calendar, and nothing, in short, that we had not ourselves rejected on the soundest of grounds. Second, that the Calendar proposed by Scaliger, together with his table of the equation *in iusta periodo tropica* [i.e. his *Tabula Æquationis Epactarum in iusta periodo tropica*, "Table of the Equation of the Epacts in the correct tropical period" — the table whose display head stands at printed 38; the terminal vowel of *iust-* does not resolve cleanly here, *iusta/iustæ* [?]], contains not one fault but very many, and those not trivial. Finally, that the Gregorian Calendar is criticized unjustly by Scaliger and by others: for in it the equation of the solar year as well as of the lunar, together with the distribution of the epacts, is so arranged that everything answers very neatly to the mean motions — which is not what one sees in Scaliger's Calendar. The tables above prove it. In them the mean Paschal oppositions have been computed over many thousands of years, and they agree remarkably with the fourteenth moons of the Gregorian Calendar, while they diverge in many ways from those which Scaliger's Calendar sets out. The reason is that his fourteenth days either run ahead of the mean oppositions or lag behind them by more than they should, whereas our fourteenth days almost always precede the mean full moons by one day — which agrees wonderfully with the Canons and with the writers on computus. There is no reason, then, for Scaliger to boast so extravagantly of his Calendar, or to offer it to the whole Christian world as a kind of divine rule and heavenly gift. All the same, we both give him and feel enormous gratitude, since his critique afforded us the occasion of illuminating the Gregorian Calendar by astronomical calculation over a great many years. The result will be that everyone understands that everything in it is rightly arranged, and that in nothing (so far as the nature of a cycle permits) does it disagree with what the councils, the Fathers, the Canons and the writers on computus have decreed. Moreover, this critique of Scaliger's — so careful, and by a man at once so acute and so learned — gives us great hope that no one hereafter will shake the Gregorian Calendar in any part, or bring forward anything better; for so great a man could not do it, and he was virtually the one man of all who seemed able to. But enough of this; let us come to Scaliger's peroration.

SCALIGER.

a Let us then embrace this thoroughly corrected form: let the bissextile days be removed evenly, at alternating intervals of 132. and 136. years; let the epacts be placed in the Calendar in their own order, and that beginning from the Calends of March, not from the Calends of January, as the specimen Calendar we have given

shows; let no two epacts, whether of the same colour or of different colours, be crowded into a single cell; let epact xxix. not be entered in place of epact xxviii. at the Calends of April; and let epact ☐ not be set immediately beneath a single epact in every month, since this is to be done only at alternate syzygies. If this is done properly and in order, as we have said, then not only will there be no censure at all, but the highest praise will accrue to the authors of the year.

CLAVIVS.

a Where on earth does this θεὸς ἐκ μηχανῆς ἐπιφανείς [Greek: *theos ek mēchanēs epiphaneis*, "a god appearing from the machine" — the *deus ex machina*; the print sets a circumflex over the eta of *μηχανῆς*, not the classical *μηχανῆς*] come from, who unties by his own authority what is like the insoluble knot of a tragedy? Truly, if he had known what we demonstrated a little earlier, he would judge very differently. For we have made it plain both that this form is thoroughly faulty — I say it with the author's leave — and that the bissextile years are removed not only more easily but also more correctly

[printed page number 49]

by centuries of years in the Calendar; that the epacts cannot be placed better than they stand in the Gregorian Calendar, and that with the start made from January and not from March; and finally that two epacts, whether of the same colour or of different colours, are on occasion crowded into a single cell not without good reason. Therefore, since everything has been done properly and in order, from this critique of Scaliger's there has accrued to the authors of the Calendar not only no censure at all but even the highest praise.

SCALIGER.

b Away with the faults, then. Let us have done with all childish skirmishing and get on with the business in hand. Everyone must put his shoulder to this, for it is everyone's concern. As long as the received form contains things you may criticize — and they are far too many — those who do not yet use it will always be able to plead why they ought not to. But if it is put forward corrected, there is no reason why it should not be accepted by everyone, since the Julian, which still clings on in many parts of Europe, is not free of fault.

CLAVIVS.

b What would you do, my dear Scaliger, or what would you say, if you had detected in our Calendar faults as many and as great as those we have noted in

your critique? All the same, your advice is sound: away with the faults — which certainly cannot be removed unless the method you have invented is removed. By all means let us have done with all childish skirmishing — which we shall assuredly never do unless your critique has done with it. And finally, let us do *what is in hand*, namely follow the Gregorian Calendar, approved by the consent of the whole world. Undoubtedly everyone must put his shoulder to this, for it is everyone's concern, as you rightly advise. Indeed, since it is now settled that there is nothing whatever in the received form that can justly be criticized, those who still do not use it will not hereafter be able to plead why they ought not to. For since what is put forward has been corrected more than sufficiently, there is no reason why it should not be accepted by everyone — seeing that the Julian, which still clings on in many parts of Europe, is not free of fault, while it is plain enough that the form put forward by that most learned and most gifted man Joseph Scaliger is not free of many great faults. Even so, what held back the Saxons, the English, the Danes and a number of other peoples from accepting the Gregorian Calendar was certainly not any belief that it was defective, but heresy and hatred of the Roman Pontiff. The Calendar pleases them; its author does not. And I have no doubt they would have received it most gladly if it had had the Emperor for its author instead of the Pope. I have myself seen a certain writing of the heresiarch Kemnicius [Martin Chemnitz] to the Landgrave of Hesse, a man outstandingly accomplished in mathematics, in which he commends the calendar quite openly and says that it would deserve to be adopted, were it not that it came from the Roman Pontiff. I pity men of that sort. The very thing they ought most to approve on account of its author, they reject — approved though it is on its own merits — solely on account of its author; and like defiant sons who hate the best of fathers, they would rather go without their father's gifts than enjoy them. And so, taking harm with their eyes open and of their own will where they might have drawn benefit along with everyone else, they earn the price of their own folly and obstinacy, even by their own judgment.

SCALIGER.

a But let this form which we propose be the most elegant, the most thoroughly corrected, the safest, and the most readily workable.

CLAVIUS.

a Are we to believe it? Or do lovers dream up their own dreams? [Virgil, *Eclogues* VIII: *credimus? an, qui amant, ipsi sibi somnia fingunt?* — set in italic as a quotation inside Clavius's roman] For I do not see how that scheme of yours can be *most elegant*, when a disordered equation of the solar or the lunar year

disfigures it; or *most thoroughly corrected*, when, as we have shown, it is heaped with faults; or *safest*, when it leads into inextricable pitfalls; or, finally, *most readily workable*, when it labours under countless difficulties because of the inconsistency of the tables it relies on. The form we have put forward, by contrast, is certainly such that I have no doubt at all that by now it appears to you too, as it does to everyone else, the most elegant, the most thoroughly corrected, the safest and the most readily workable. And if the shape of your own method still delights you, you may love it alone: you will certainly not have me — or anyone with sense — for a rival.

SCALIGER.

b I therefore beg those whose business this correction is: let them lay aside all hatred and all complaint, and either admit this form or devise a better one.

CLAVIVS.

b Stop begging, my dear Scaliger. We have laid aside all hatred and all unjust complaint, and even so we can in no way admit that form of yours once it has been examined more carefully. We do not deny that we could have erred, for we are men. But if anything in human affairs is certain, we are confident that in this matter we have not erred. For it is more likely that one man should be misled and deceived in his own cause than that many men, no less capable judges, should be so in another's. Indeed we find the Lilian method to be the best, precisely by comparison with this form of yours; so that there is no point in devising a better one — which, in my judgment, cannot be done.

SCALIGER.

[siglum: a small solid mark, apparently a worn superscript letter [?]] For we are not hawking our own work. This one thing we demand, urge, and beg again and again: that the faults be removed.

[printed page number 50]

CLAVIVS.

c Nor, for that matter, are we hawking our own work. Before it was published to the world at large we submitted it for examination to all the distinguished mathematicians of the Christian world, as the *Compendium of the Calendar* [*Compendium Calendarii*], sent out to princes and to republics, attests. And Gregory, Supreme Pontiff, sanctioned the new Calendar on their verdict and by the common consent of them all. This one thing we demand — that discord be

removed, since the faults have been removed — this we urge (to use your own words), and beg again and again.

This is what I had to write: not so much against this *Elenchus*, or critique of the Gregorian Calendar, as on behalf of the Gregorian Calendar and of the truth. I ask and implore Scaliger, a man outstanding in talent and in learning, not to take what I have said in any sense other than the one in which I said it. For my own part I have said nothing whatever with the intention of detracting from his reputation, which I wish to see safeguarded. My purpose was rather to warn a man no less industrious than gifted — and to warn him as a friend, as I said at the outset — not to think that other men must be mere hay by comparison with himself, and not to let himself be carried headlong in reliance on the talent in which his strength chiefly lies, but rather to turn those splendid resources of nature and learning to the defence of what is true and right. The truth has at times made me somewhat freer in my speech; I do not deny it. Literary studies and disputations are of this kind: they cannot be handled as they deserve without some heat of spirit and a certain sharpness, especially when the task undertaken is the defence of truth against slanders. Had my purpose been to refute the man rather than to protect the truth, I should have gone about this business very differently. But since he himself professed that in this *Elenchus* he was seeking the truth alone, I too have been content to refute and demolish the fallacious arguments brought against the truth. For I have no fear that a man of such quality and such standing, once the fog of error has been dispelled, will prove more eager for controversy than for truth — especially since to err is human, while to acknowledge and correct an error belongs to the wise man. Nor in fact has Scaliger won no credit for his talent by this effort of his — in my judgment at any rate, except that I find modesty wanting in it — whether because *in great undertakings even to have willed it is enough* [Propertius II.10.6, quoted in italic: *in magnis & voluisse fat est*], or because in attacking the cause of the Gregorian Calendar he has made it more illustrious, and better.

F I N I S.

[Divisional title page — global PDF p. 817; unnumbered]

RESPONSIO AD CONVICIA, ET CALVMNIAS IO- SEPHI SCALIGERI, IN
CALENDARIVM GREGO- RIANVM.

Autore

CHRISTOPHORO CLAVIO BAMBER- GENSI, E SOCIETATE IESV.

A REPLY TO THE ABUSE AND SLANDERS OF JOSEPH SCALIGER AGAINST THE GREGORIAN CALENDAR.

By

Christoph Clavius of Bamberg [Christoph Clavius], of the Society of Jesus.

[Global PDF p. 818 — printed 52]

RESPONSIO CHRISTOPHORI CLAVII BAMBERGEN- SIS E SOCIETATE IESV,

Ad conuicia, & calumnias Iosephi Scaligeri, in Calendarium Gregorianum.

THE REPLY OF CHRISTOPH CLAVIUS OF BAMBERG, OF THE SOCIETY OF JESUS

To the abuse and slanders of Joseph Scaliger against the Gregorian Calendar.

I would have borne your intemperate language against me, Joseph Scaliger, and the unbridled licence you allowed yourself for every kind of dishonest carping in the work you recently published on Eusebius's *Chronicle* — that treasury of chronology — in the spirit I would have judged proper to a Christian, to a man in religious life, and to a man of this age. But at the same time you showed yourself an enemy of decency and a foe of the truth. And since my silence and my self-restraint would have brought a great deal of harm and no advantage at all, whether against your shamelessness or against your lies, I shall now heap upon you charges which — if they cannot deter you from the recklessness of slander (and I should be a fool to think they could) — will at any rate, as I hope, vindicate me and my writings before posterity against a thoroughly unjust calumny. And so that my silence may not tell against me in the eyes of less sophisticated readers — I have no fear of the sharper sort, who see perfectly well what I am proving and what you fling out at random — I shall deal with you in a well-meaning spirit, though in rather hard words, and far more by the weight of arguments. On this one point above all I shall part company with you as widely as I can: you, whenever you say anything, care nothing at all — shameless man — for whether you say it aptly, fittingly, consistently, or truly. Indeed, if I had any hope that you would change the mind and heart you have so far armed for every kind of folly, falsehood, and insolent speech, and recall them to better and saner counsels, I would warn you as a friend, make my suggestions in private, urge you gently, and

exhort you mildly. But you have long since returned, as if by right of postliminium, to your natural bent, convicted though you were by the force of a truth thoroughly known to you — a truth which, if you care to remember, you once professed yourself. And so I shall take up with you the method that the most learned Fathers and the holiest of men, of whom we have abundant examples, took up with the assailants of truth. I shall imitate Augustine, Jerome, Origen, and Tertullian, to say nothing of six hundred others. When they found that they could not correct men by sweetness of speech and the charm of kindly persuasion — by the gentler remedies, as it were — they applied fire, the knife, the opening of veins, the harshness of the steel: that is to say, they cured them by a sharper chastisement in words. I would rather, then, that truth should breed in you this hatred of me that has followed so far, than that base compliance should win me your goodwill.

And it is not in me alone that you have stirred up this reaction — I, to whom your character has long been an open book: shifty, underhand, many-sided; that crafty audacity, that insolent self-assurance, that shameless and brazen effrontery. You have stirred up in everyone an astonishment that passes all belief: astonishment, that is, that at your broken age, full of years (whether full of judgement I do not know), you should have turned your mind to trifles as childish as these, which could bring you no advantage, much expense, a great deal of disgrace, and the stain of folly and stupidity. Come, tell me: if you hated Clavius out of hatred for the truth, what reason was there to relapse again and again into the same ravings, and to set yourself against the decrees of the Popes, the judgements of the Fathers, the enactments of the Councils, and the most solid arguments of learned men? What reason was there — out of hatred of Clavius, or rather, to put it better, of piety — to desert the common consensus of the Church like a traitor, and to conclude that you had to wage open war against her? Did that papal bull so turn your stomach that you thought every drop of your malignant venom had to be vomited out on me? That was what stung you — precisely that. For you saw that if you did not want to look impious, you would have to think as the bull thinks; and that if you kept silent, your unbridled appetite for carping would be badly served, and you would never get the chance to pour out insolently in speeches that full wineskin of yours, crammed with abuse of every kind. I know what caused you pain: my thoroughly just rebuke of that thoroughly unjust rebuke of yours has upset you. But look here, my good man, what is it in that rebuke that you object to? This one thing, plainly: that I spoke of you more respectfully than your ignorance deserved. In what word, even the lightest, did I offend you? Was it that I dismissed your arguments so temperately that a good many people judged *me* the one to be blamed for treating you so kindly? But I

could not — I would not, and indeed I had no right to — subscribe to utterly false opinions for your sake, with truth thrown aside. Whom did you take yourself to be dealing with, Scaliger? Or for whom were you writing, when in the *Canones Isagogici* to Eusebius's *Chronicle* you exhaled so many insults, without bringing forward even the slightest argument, in the most disgraceful fashion, straight from the stables and the vilest taverns? For those men, perhaps, who do not know your character? I am not lying, Scaliger — so help me God — when I say that while I was working my way through those writings of yours, so full of shamelessness and squalor, I judged that Tertullian's remark against Hermogenes fitted you quite superbly: *Hermogenis doctrina tam nouella est, denique ad hodiernum diem homo in* — "Hermogenes's teaching is so novel that, in short, down to the present day he is a man in the [world...]"

[Global PDF p. 819 — printed 53]

seculo & natura quoque hæreticus, etiam turbulentus, qui loquacitatem facundiam existimet: & impudentiam constantiam deputet, & maledicere singulis officium bonæ conscientiae iudicet.

[The Tertullian quotation, carried over from the foot of the preceding page, completes:] "...a man in the world, and by nature a heretic as well, and a troublemaker into the bargain — one who takes garrulity for eloquence, reckons shamelessness to be firmness of principle, and judges the abuse of every individual to be the duty of a good conscience." (Tertullian, *Adversus Hermogenem* 1)

Sed non replenda est curia verbis, Quæ tuto tibi magna volant.

But the court is not to be filled up with words — the grand words that fly safely for you.

One must deal with the learned and the erudite, Joseph. And in fact I do not believe you meant it when you assign me to the mathematicians not on the strength of native talent but by practice and by the long persistence of my labours — since in that critique of the Gregorian Calendar you had spoken of me honourably, and said you would rather be criticized by Clavius than praised by many. But I shall now say nothing about my own talent; such as it is, I acknowledge that it comes wholly from God, best and greatest, in whose service my industry has always sweated. And even if it were of the highest order, it would not go canvassing for a vote of praise on my own recommendation. On this score you deserve heavy censure: you praise that wretched mediocrity of talent of yours — for I do not, as most people do, take you for a blockhead or a lump of

lead — in such a way that nothing could look more distasteful or more absurd. I think I have aptly transferred to you what Jerome said against Jovinian: *Totus tumet: Totus iacet, attollit se per singula, & quasi debilitatus coluber in ipso conatu frangitur: Non est contentus nostro, id est, humano more loqui: altius quiddam aggreditur.* — "He is all swollen and all collapsed at once. He rears himself up at every point, and like an enfeebled snake he breaks in the very effort. He is not content to speak in our fashion, that is, in human fashion: he attempts something loftier." (Jerome, *Adversus Iovinianum* I.1)

Parturient montes, nascetur ridiculus mus.

The mountains will go into labour, and a ridiculous mouse will be born.
(Horace, *Ars poetica* 139)

That this is not the work of a sane man, Orestes out of his mind would swear. A few words must now be said about your talent; the discussion of it is to be framed to fit you — and not to run long, as your writings do.

Piperis & thuris iam iam factura cucullos.

Destined all too soon to make wrappers for pepper and incense.

But, in view of your deserts, briefer than one might expect. And since —

Nequam bestiam; & damnificam imitaris, quam non amabo.

You are imitating a worthless and destructive beast, one I shall not love.

— I shall use arguments of my own, not those of my colleagues, whose virtue and integrity of character you find hateful, and whose learning, endorsed in every branch of study by the public consensus of all scholars, is no cheap thing. And yet you have chosen, as usual, to detract from the reputation of *Benedictus Pererius* [Benito Pereira], a man of the greatest learning and erudition. In complaining that his writings lack a chronological method — a method which is in fact exactly present in his books — you reveal what it really is that you resent: that they shed lustre on the Church, defend the judgements of the Fathers, and weigh the considerations of sincere piety and doctrine; in a word, that being sacred and pious, they support the Catholic religion. It is with my own pen, my own, that I shall prick you; you will be wounded by my arguments, not by re-stitched and randomly clever patchwork — if I may call it that — of grammatical phrases, of the kind those *Prolegomena* of yours are made of. In them, good God, what is there that you do not repeat a thousand times over, swapping actives for passives, until you have rolled right back to the starting-points of your own stupidity? How much better off you would have been had you never come up out

of grammar's hovel to look upon a light of learning broader than your mind's edge could take — above all the light of mathematics, whose most dazzling brilliance so dazed your dull and blunted mind that, half-blind, you have blundered this way and that, baffled and unsure, against every kind of stumbling-block of error. Now attend.

Eheu quam miseros tramite devio Abducit ignorantia.

Alas, how wretched are those whom ignorance leads astray by a byway!

[Margin: Boet. lib.3. Metro. 8.] — Boethius, *Consolatio Philosophiae* III, metrum 8.

And this has certainly been the lot of all those men who in this age of ours have believed the highest credit of their talents lay in openly opposing every one of Ours, and in attacking them besides with every kind of abuse, where it was allowed and where it was not. Pindar puts it splendidly:

[Margin: Ode 8. Nem.] — Pindar, *Nemean* 8.

Ὅψον δὲ λόγοι φθονεροῖς.

Inuidis sermones obsonij sunt loco.

For the envious, words serve in place of a relish.

[Greek: the printed text has the breathing-plus-acute set as a separate sort before the capital omicron; the received Pindaric text reads φθονεροῖσιν, but the print shows the shorter ending — transcribed as printed.]

And that other poet, quoted in Stobaeus:

[Margin: Serm. 37.]

Τοῖς ὅδ' ἐν ὅσιν, ὅδ' ἐεῖς ὅλως φθονεῖ; Αἰεὶ τὰ σεμνὰ πάντα κέκτηται φθόνον,
Ἄπαν τὸ λίαν συνετὸν, ἔστ' ὅτι [?] φθόνον.

*Iis qui nihil sunt, inuidet nemo certe; At splendidis invidia rebus est comes,
Hanc magna comitem habet prudentia.*

No one at all envies those who are nothing; but envy is the companion of splendid things, and great intelligence has envy for its companion.

[Greek: 8 is the printed ou-ligature sort, i.e. οὐδὲν / οὐδὲ / ὅσιν (= οὗσιν). The verb before ὅτι in the third line is set with the στ ligature sort (ς), i.e. ἔς = ἔστ', expanded here in the block's convention; the span between it and the final φθόνον remains unresolved and is flagged [?]. The Latin rendering above is the source's own.]

Tell me, Scaliger: if you thought you knew something, why did you not put forward your objections against me in a friendly spirit, in a human manner — certainly not a bestial one — so that, even if others recognized your ignorance, they would have no ground at all for blaming your intention? As things stand, by what means will you escape the judgement of Posterity, seeing that in its verdict it concedes nothing whatever to favour for the dead, when it will find you not merely raw and unskilled in the subject you handle, but malicious as well?

Come now, use whatever talent you have. Apply your mind, lend your ears — not unfair ears, as is your habit, but fair ones; that is how a learner must be disposed. Have done with quarrels and insults: for if you are a grammarian, you know that line of Euripides in the *Bacchae*:

Ἀχαλίνων ζομάτων ἀνόμδ τ' ἀφροσύνας τὸ τέλ(ος) δυσυχία.

Infraēnis oris, (vt tuum est) ac illegitimæ stultitiæ finis est infortunium.

The end of an unbridled mouth (such as yours is) and of lawless folly is misfortune.

[Greek: the print sets the στ ligature sort (ς) in ζομάτων and δυσυχία, the ου ligature (υ) in ἀνόμδ, and a single terminal ος-ligature sort in τέλ(ος) — i.e. Ἀχαλίνων στομάτων ἀνόμου τ' ἀφροσύνας / τὸ τέλος δυστυχία (Euripides, *Bacchae* 386–388).]

Lay aside your hatred for a while. Put on a temper that is not ungenerous (as it mostly is), nor stubborn (as it often is), nor obstinately fixed (as it always is), but readier to learn. Take this little work of mine, painful though it may be, as a drug and a remedy for curing that sickness of your soul — for by no other word can it, or should it, be more correctly named. And convince yourself that you will win a greater reputation for talent and integrity among all men if you frankly acknowledge, without any malicious pretence, that in your errors you are a man, and at last give truth your hand, than if for the sake of consistency — or rather of obstinacy — you choose to persist in your opinion. For my part, I shall lead you, straying and wandering as you are, through the labyrinths, so to call them, of your ignorance, by truth's Ariadne-thread, so that if you have any soundness of mind, so as to be willing, and any talent, so as to be able, you may easily find your way out of ignorance's windings. And so that you may be guided more easily, and as if by the hand, to weighing the force of the arguments, I shall sort out everything you have scattered about in confusion and disorder here and there, and shall arrange each item as precisely as can be done in its proper place.

And first, to make my beginning here: that book of mine fell under your eye, the one which...

[printed page number 54]

contains the exposition of the [?] Calendar — the book which you, with stupid audacity, call in your Pedagogic commentary a *Giant mass* and a *Gigantic Apologetic*. You would like to patch up your own ruin with the ruins of that mass! Poor wretch: you apparently do not see what foundations it rests on, or with what defences it is equipped, so that it holds every threat and every siege-engine in contempt. In this Gigantic work of mine you call me *raving*, *a babe*, *a raw recruit*. Raving, because I put you into my books, and judged that importunate, shrill crow worth a rebuke from me? A babe, because I handled you courteously and kindly, when you deserved to be pricked with every sting that speech has? A raw recruit, because up to now I have endured your audacity, your self-assurance, and that excessive boasting of yours, more nauseating than nausea itself? Just so — indeed. But you will find out from my arguments that I have now changed my policy. Perhaps you will say that you called my Calendar a giant mass because it carried the Pope's bull at the front, and that you assail the Pope's authority so fiercely because you are the Church's declared enemy. So that is the source of those tears; that is the source of poor little Scaliger's bellowing and complaints. But do put some limit at last on your shouting. What more is there to say? We cannot oblige you. We are sons of the Church, and we follow the papal authority, which is the rule and standard of truth. As long as you are good, we keep you in the place of a brother; but as long as you choose to be what you are, we keep you in the place of a heathen and a tax-collector. Have you got me? You have, I think.

O R D O Y O U call it a *Gigantic Apologetic* because in it the table of movable feasts, together with the epacts and the mean full moons, is continued and extended right up to the year five thousand? Then I have hit the nail on the head. For the reason you call the book a giant mass is precisely that the table struck you as immense — the very table which (and this is what pains you) plainly demonstrates that the equation of the epacts in the new Calendar has been rightly established, since by means of it the movable feasts are celebrated, for all those years, in accordance with the Decrees of the Councils and of the Popes; a very few years excepted, in which, because of the imperfection of the cycle (for no cycle can avoid every inconvenience, as I taught in the exposition of the Calendar), matters stand a little differently. This you cannot bear with an even temper — precisely because the thing refutes your own equation in the clearest way. For your equation does not present Easter as celebrated according to the

Church's prescription even for the nine years after the year 1600, as I showed at great length in my correction of your *Elenchus* and in the book of the exposition of the new Calendar, where the mean full moons of a great many years were computed in order to demonstrate this. There you have 50 years in which your Lunæ XIII always run two days ahead of ours — which are the true ones, as I showed — and all the computists teach that this is faulty. Then another 80 years are added, in which your Lunæ XIII, which you fabricate at your own discretion, get ahead of ours by a full three days; and that is a graver fault still. Again, 16 years are to be seen in which you carry out the solemnity of Easter in the twelfth month, and so force two Easters upon us in one year — and none at all in the year immediately following. What could be more absurd than that? I pass over your other errors, which are noted in the places I have mentioned.

S I N C E T H I S is so, are you not ashamed to charge the Gregorian Calendar so often in your book, slanderously, with having its epacts wrongly arranged and equated? For if right up to the year 5000 they lawfully indicate the Easter to be celebrated [*Pascha cele-brati*, so printed; sense requires *celebrandum*], how do you dare to assert that they are utterly false and erroneous? Consult our tables published in the exposition of the Calendar — but do it attentively; otherwise you will understand nothing, for from what you say I gather that this is exactly what has happened to you so far. And if you do not find the matter to stand as I say, let me be a liar. There you have the reason why our exposition of the Calendar displeases you so much, and why you have neither borne the truth with an even mind nor acknowledged it.

N E X T, in the same Prolegomena, and in the three books of the Canons, you repeat your errors to the point of nausea — errors which I refuted long ago in my correction of your *Elenchus* (which you most shamelessly call a *strawy little pamphlet*, to say nothing of the other, filthier names you dress it up in). Why, I ask, do you make no answer to my criticisms, or fail to make good your own inventions? You really are a ridiculous man, Scaliger — a babbler, rather — since you have failed to grasp that one must proceed by argument, not do battle with insults. In my exposition of the Calendar, if you have looked at it, I bring forward the strongest of arguments; and I do not merely take the force out of your objections — I dissolve them in the plainest possible way, throw them out, and shatter them utterly. Why do you not learn from me? You ought first to have refuted my arguments, and then to have shored up your own and confirmed them — if you had had any. But how could you have any, when truth itself is one? And if you are willing, you will see that truth quite transparently in my arguments. I find nothing solid in your Canons; all I see is a hodge-podge of

tables, useless for this business, stitched together partly out of your own opinion, partly out of the opinion of the Jews, the Arabs, the Egyptians, the Chaldeans, the Saracens, the Armenians, the Damascenes and other men of that sort — tables which teach absolutely nothing to the purpose. Your object, of course, is to catch the popular breeze by a vain [?] display of your hollow learning, which only those admire who see and understand nothing in this business. Good God, how often do you show off your "method" gloriously! How offensively you praise it! How often do you exult in your discoveries (and what are they?) so much that you scarcely seem to be in possession of yourself! If you had earned any credit at all with the rest of the world from your writings — and be assured you have earned none — you would nevertheless have ruined it completely by that sycophantic boasting. Do you really commend discoveries of your own in which ignorance is lavish with words and full of tedium?

O, H O W O F T E N do you throw it at us mockingly that the principles of the new Calendar are a *divine discovery* — when in truth they are a divine discovery (and that is what stings you most), since in it the Canons and the Decrees of the Fathers and the usage of the Catholic Church are observed to the letter. The same cannot be said of your own *strawy* Calendar (to use your own word), as is clear from my refutation: for in the celebration of Easter you stray from the Church's practice by the whole width of heaven, so that it can truly be asserted that you are entirely ignorant not only of what is required for the right celebration of Easter, but that you do not even understand what the word itself means. The Paschal tables which I constructed according to your Calendar demonstrate that clearly enough. But let us now look over a few of the quibbles you have spewed out against me and against the new Calendar, so that everyone may understand that in them you conduct yourself not sincerely and openly, but slyly and maliciously. Listen, Grammarian: *Nothing is, Antipho* —

Quin male narrando possit deprauier.

but that it can be spoiled in the telling.

A N D it really is remarkable that you say nothing new, but simply repeat the very same things and force upon us, like cabbage warmed up again, what I refuted long ago — so that the poet's line fits you with perfect justice:

[Margin: Georg. 1.]

Et veterem in limo rana cecinere querelam.

And in the mud the frog[s] croaked their old complaint.

B U T if you happen to be held by so strong a desire to hear those same criticisms of mine over again, I shall comply with your wish. Perhaps what you did not take in before you will take in now that it has been repeated so many times — that is how it goes with duller minds. Yet I shall do this not of my own accord

[printed page number 55]

and gladly, but under compulsion and provoked by you — above all to satisfy many friends who have urged me to it more than once, even though not a few of them have judged your trifles to deserve no rebuke at all.

Præbe ergo aures iniquæ mentis Aselle.

Lend your ears, then, you donkey of an unfair mind.

Y O U A T T A C K, before anything else, in the Prolegomena to the Canons and in the Canons themselves, what I demonstrated both in the *Apologia* against *Mæstlinum* [Michael Mästlin] and in the exposition of the Calendar — namely, that the Moon anticipates one day in $312\frac{1}{2}$ years. You reject that anticipation and insist instead that it takes place in 304 years, following Hipparchus in this (of whom I shall speak a little further on) and the common run of computists.

L E T U S P R O V E our own equation first, and then refute yours — since, as you say in the Prolegomena, you are eager to learn from me on what grounds I concluded that a προήγησιν [Greek: προήγησιν (proēgēsīn, accusative of προήγησις, "running-ahead, anticipation"); the initial pi is set with the curly π sort] of one day comes about in $312\frac{1}{2}$ years. So hear the proof of it — a proof for which no other astronomy and no other arithmetic is needed (whatever you chatter). The lunar month, taken according to the mean motion, comprises 29 days, 31 minutes of days, 50 seconds, 7 thirds, 57 fourths — that is, 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 48 fourths. Therefore 235 lunar months will make up 6939 days, 16 hours, 32 minutes, 27 seconds, 18 thirds, 0 fourths. And since 19 solar years consist of 6939 days and 18 hours, the 235 lunar months will fall short of 19 solar years by 1 hour, 27 minutes, 32 seconds, 42 thirds. It is by this interval of time that the Moon anticipates its own places in 19 years. And when the calculation is carried through, in $312\frac{1}{2}$ years it runs ahead of its places by 23 hours, 59 minutes, 53 seconds, 5 thirds, which fall short of a whole day by only 0 hours, 0 minutes, 6 seconds, 55 thirds. So we can rightly say that the Moon runs ahead of its places by one day in $312\frac{1}{2}$ years, since only 0 hours, 0 minutes, 6 seconds and 55 thirds are wanting to complete the day.

S U P P O S E the size of the lunar month to be the same — 29 days, 12 hours, 44 minutes, 3 seconds, 10 thirds, 48 fourths — as the Prutenic Tables [Reinhold,

Tabulae Prutenicae] would have it, which are held to be the more reliable. Then, working out the same calculation, you will find that in 304 years the Moon anticipates its places by only 23 hours, 20 minutes, 43 seconds, 12 thirds; and these fall short of a whole day — that is, of 24 hours — by 0 hours, 39 minutes, 16 seconds, 48 thirds. For those to be anticipated as well, a further 8 years and more are needed. So it is truer that the anticipation of one day occurs in $312\frac{1}{2}$ years, as we say, than in 304, as you will have it. If you have some other arithmetic and some other astronomy, share it with us, and answer this calculation of ours if you can.

O N T H E C O N T R A R Y, the Moon cannot anticipate a whole day in 304 years unless we say that in a single enneadecaeteris [*enneadecaeteris* — the nineteen-year cycle] it runs ahead of the Sun by $1\frac{1}{2}$ hours. And that in turn is impossible unless you lay down that one lunar month comprises no more than 29 days, 12 hours, 44 minutes; and consequently the common lunar year 354 days, 8 hours, 48 minutes; and the epacts of one year 10 days, 15 hours, 12 minutes. All of this is thoroughly ridiculous and discordant — indeed it contradicts every astronomer, since they all make the lunar month and the lunar year larger, and the epact of one year smaller. As for the drawbacks that follow from these false lunar periods, anyone who uses them to compute the mean new and full moons over a great many years will find them out easily enough. Since this is so, a judicious reader will readily see how inept, childish and ἰδιωτικὸν [Greek: ἰδιωτικόν (*idiōtikon*, "amateurish" — the mark of an untrained layman)] it is to suppose that the anticipation of one day takes place in 304 years and not rather in $312\frac{1}{2}$.

B U T what shall we say of Hipparchus, who was the first to lay down that this anticipation takes place in 304 years? Did he too go wrong? Not in the least. He simply followed the common practice of astronomers, who, so as to put forward what they call round numbers, are not much troubled about certain small fractions. So we see them make the year 365 days and 6 whole hours, although according to the Alphonsine Tables it comes to only 365 days, 5 hours, 49 minutes and 16 seconds. Again, we see the same men set the epact of one year as comprising 11 whole days, although it contains only 10 days, 15 hours, 11 minutes and 22 seconds. In the same way they say that the new moons return to the same days of the months after 19 years, although in fact they come back sooner by 1 hour, 27 minutes, 32 seconds and 41 thirds. Yet they leave the care of these small fractions to posterity, to add or subtract them after many years, so that both the year may be corrected and the new moons may be found more surely by means of the epacts. It is on this principle that, in order to correct the year, the period of 400 years was instituted, in which three bissextiles are cancelled. And in order to

correct the lunations, tables of the true epacts have been drawn up — as we did in the exposition of the new Calendar, and as Erasmus Reinhold, *Antonio Magino* [Giovanni Antonio Magini] and others have done. Finally, so that the nineteen-year cycle should not lead us into error, Hipparchus devised the period of 304 years, which the crowd of computists follows; whereas we have set up the more accurate period of $312\frac{1}{2}$ years. Observing, then, in this way that 304 years contain 16 nineteen-year cycles, and 323 years 17 of them, Hipparchus chose the round period of 304 years as being nearer to the $312\frac{1}{2}$ years in which the anticipation of one day more truly occurs — because, that is, over many centuries no error of a whole day arises in tracking the new moons. But we must not suppose that he thought the anticipation of one day happened exactly in those 304 years, unless we are prepared to say that he understood the calculation of the new moons no better than you do — and that is not to be said of so great a man. Although, to judge by your ignorance, I have put it too mildly: you would think that nothing should be granted to Hipparchus — nor even to Archimedes, nor to all the mathematicians, if they hold an opinion against you. But that point about the round number the acute mathematician Scaliger did not notice, or at any rate pretended not to notice, so that he might have freer scope (though no cause) for finding fault with our anticipation, which we say takes place in $312\frac{1}{2}$ years. For what is it you are criticizing here, Scaliger? That, dropping the round number of 304 years, we propose the truer number of $312\frac{1}{2}$, even though the nineteen-year cycle is not contained in it an exact number of times, as it is in the other? If that is so, you will certainly be criticizing all astronomers — and this is the mark of the utmost (shall I say ignorance, or shamelessness?) — for asserting that the year contains 365 days, 5 hours, 49 minutes, 16 seconds, on the ground that the common crowd makes it 365 days and 6 hours. On the same principle you will reckon worthy of blame those who define the epact of one year as comprising 10 days, 15 hours, 11 minutes and 22 seconds rather than 11 whole days with the common run of computists. And finally you will not leave unblamed those who assert that the new moons return to the same days of the months after 6939 days, 16 hours, 32 minutes, 27 seconds, 18 thirds — on the ground that this number of days does not fill out the 19 years, which is 6939 days and 18 hours. What could be more absurd than that? See, then, how honourably you conduct yourself in those quibbles of yours. See what monsters, what prodigies you admit in mathematics — you who have not grasped that you have declared war not only on the mathematicians, whom you reckon to have seen nothing whatever, but on the common judgment of all men and on truth itself. But where are those outcries of yours? Where the shouting? Where the mob-scenes? Where those schoolmasterly exclamations which you poured out against Clavius — not

because you meant them, but so that you might look as though you had thumbed through Priscian? Where are those ravings, that notable babyishness, and the raw-recruit's apprenticeship in

[printed page number 56]

these matters, which you say you can see in my book — although you see nothing there at all? That you are certainly a raw recruit in these matters, indeed a babe, and for the most part raving, no one will be able to doubt who considers the sheer number of insults that keep dropping out of the hedge of your teeth, and who sets my solid doctrine, drawn from practised astronomers, beside your own chimeras and dreams. Immortal God! In order to assail our equation and defend your own, what has not dropped from you that is unworthy of a mathematician — you, a mathematician (if indeed you are a mathematician, and not rather a *κακομαθηματικός* [Greek: *κακομαθηματικός* (*kakomathēmatikos*, "a bad mathematician," one who has learned his mathematics badly); the print sets the curly ϑ sort], as your *Cyclometrica* abundantly testify)? You say: if the Moon in $312\frac{1}{2}$ years runs one day ahead of its place, then a new moon which — to take your example — has fallen in March must, after $312\frac{1}{2}$ years, anticipate one day in September; and you add: who could hear that without laughing? What raw recruit, let alone what mathematician, has ever let slip so gross an absurdity? But look here: who could hear without laughing what has slipped out of you in this passage? As though that new moon of March were also the new moon of September! Compare two March new moons with each other, or two September ones — but of the same golden number — and you will see that the later of the two by $312\frac{1}{2}$ years has anticipated one day. Not, however, in the year that is later by $312\frac{1}{2}$ years, since that year does not have the same golden number as the year which precedes it by $312\frac{1}{2}$ years, but in another year after it which does have the same golden number. For example: in the year 323, with golden number 1, the mean new moon of March fell on the 23rd day; but in the year 646, which is 323 years later, with the same golden number 1, it fell on the 22nd. There you see that the Moon has anticipated one day. Again — to use your own example — in the year 1292, with golden number 1, the new moon of March occurred about the 20th day of March, and in the year 1615, with the same golden number 1, on the 19th of March. For in order to observe the anticipation of one day, one must not take two years of different golden numbers, as you maliciously and fraudulently do, even if the one is $312\frac{1}{2}$ years or more distant from the other. Of that kind are your two years 1292 and 1604, which are 312 years apart from each other, and of which the earlier has golden number 1, the later 9. In this matter you trifle so childishly and so like a sycophant that you deserve to be hissed off the stage.

Whom did you imagine you had to deal with, you Momus? With some ignoramus or blockhead who would not recognize your slanders? Do you not know that two different golden numbers within one and the same enneadecaeteris, even though they are next to each other, place the new moons on different days — while the Moon can neither anticipate its own places nor put them off (for who is such a blockhead as to say that in one year the Moon anticipates or postpones a whole day)? For instance: if the golden number VIII indicates that the new moon of March falls on the 13th day, as happens in this century, does not the golden number IX in the following year throw it onto the second day, while the golden number VII in the preceding year sets the same new moon on the 24th day — so that the one comes eleven days earlier and the other eleven days later? Would you accept this line of argument if someone were to argue against you in that way? In the year 1292 the new moon fell, for example, on the 20th day of March; in the year 1597, which is 305 years distant from it, on the 8th; and in the year 1595, which is 303 years later than it, on the 31st. Therefore the Moon does not anticipate one day in 304 years — seeing that the new moon of the year 1597 precedes that of the year 1292 by 12 days, while the new moon of the year 1595 follows it by just as many days. Certainly I think you would not accept it, and rightly so. For if it anticipates one day in 304 years, it cannot but anticipate one day in 303 and in 305 years as well, provided the same golden number is taken which was in use 304 years earlier or *circiter* [thereabouts]. Take it, then, that in the same way, if the Moon anticipates one day in $312\frac{1}{2}$ years, as I have proved, it cannot be that after 323 years from the year 1292 — that is, in the year 1615 — it should not likewise anticipate one day, since in both years the golden number is 1. So stop throwing the year 1604 at us, since in it the golden number is not 1, as in the year 1292, but ix. For since in the Calendar the golden number ix has its seat under golden number 1, but not immediately under it, as we said in the exposition of the new Calendar, chapter 9, the result is that the new moon of the one falls two days below the new moon of the other. Likewise, because the golden number XII is placed immediately above golden number 1, it comes about that the new moon of the former falls on the day which precedes by one day the day of the new moon of golden number 1. For my part I cannot wonder enough at your ignorance — or your malice — so remarkable is it. For if the Moon anticipates one day in 304 years, as you suppose, how can it be that a few years later or earlier it does not also anticipate one day, provided one and the same golden number is taken? Or has it escaped you that all astronomers and computists teach that the new moons do not return to the same days except from one golden number to its like after 19 years have elapsed? But to hold that the anticipation of one day takes place from one year of an enneadecaeteris to the

like year, so that the span of time in which one day is anticipated contains an exact number of enneadecaeterides — that is sheer soothsaying and prophecy. Who are you, to dare prescribe a law to the Moon, that it must anticipate one day in just so many years? And yet why should you not dare, when you so regulate its course as to bring a new populace of stars into the heaven and to invent new lunar revolutions? For if the Moon in a single enneadecaeteris does not anticipate one and a half hours, as I showed above, how can it anticipate one whole day in 304 years? You ought to be ashamed of such ignorance, and of such incompetence in arithmetic, that you cannot work out this calculation, or do not understand it. And let this be enough on the anticipation of the Moon in $312\frac{1}{2}$ years. If it does not satisfy Scaliger — what is that to me? I care not a straw. But if he is willing to learn and to correct his own follies and falsehoods, let him consult the tables placed at the end of my correction of his book. Those tables abundantly demonstrate that the anticipation more truly occurs in $312\frac{1}{2}$ years than in 304, since the Lunæ XIII reckoned by the equation that advances over $312\frac{1}{2}$ years agree better with the Canons and with the decrees of the Councils than those reckoned by the equation that advances over 304 years. And so I cannot wonder enough why Scaliger is willing to persist so stubbornly in his error.

T H E S E C O N D head in the new Calendar which Scaliger's stomach cannot digest concerns the fixing of the equinox at the 21st day of March. In this matter he betrays his own stupidity in mathematical questions, and his remarkable shamelessness, quite wonderfully. For it is not against me alone, but against all the astronomers of our own time as well — all who have written about the restitution of the equinox and its retention at the 21st of March — that he rages and raves most absurdly. In the exposition of the new Calendar we wrote as follows. Since in 400 years the equinox runs three days ahead of its place, we restore it to its own place by the omission of three bissextiles in 400 years. And so that this omission may be easier, and better suited to the grasp of ordinary people, we laid down that in the first centesimal year, which will be 1700, the bissextile day is to be omitted, so that that year has only 365 days, whereas otherwise it would contain 366. The same is to be done in the second and third centesimal years, namely in the year 1800 and 1900; but in the fourth cen-

[printed page number 57]

tesimal year — say in the year 2000 — a day is to be intercalated in the customary way, so that that year comprises 366 days. On this plan, in any span of 400 years the first three centesimal years are to be common years (2100, 2200, 2300), and the fourth, 2400, bissextile; and so on in turn. This rule of intercalation will be

very easily kept in the memory, since it closely resembles the familiar intercalation every fourth year, in which the first three years are common and the fourth bissextile.

And what does Scaliger — that most acute mathematician, if you please, and the most sharp-sighted of all men — say to this? He does not approve this method of intercalation. Why? Because (as he trifles) on Clavius's view three would be four and four three. What intolerable impudence! Where did you find that I ever said this in my writings? Is it because I removed three days from three centesimal years, days which accumulate over four centesimal years? Where did you learn this stupid brand of logic? Is this that famous keenness of intellect you are forever parading? Are these perhaps those admirable discoveries of yours? And to help you grasp the matter better, I shall put it to you by an example fitted to your capacity. Suppose someone has to pay three gold pieces over four years, and, to oblige his creditor, pays all of them in the first three years, so that in the fourth there is nothing left to pay: will three now be four for you, and four three? Listen, my dear Scaliger — take my word for it, you will draw a sounder and less absurd conclusion from that case. So the stick is in the corner, ready to give you a sound beating for your inept raving. What an unheard-of, stupid, frivolous and childish way of arguing! Who could receive it without laughter, without an explosion of catcalls and hissing? Indeed, when I read such flippancy and absurdity in your writings,

Obstupui, steteruntque comæ, & vox faucibus hæsit.

I was struck dumb; my hair stood on end, and my voice stuck in my throat. [Virgil, *Aeneid* II.774]

I would never have believed that so much stupidity could be found in a man of sound mind.

F O R as to your saying that I was struck dumb when I learned from your *Elenchus* that the first day must be omitted in 132 years, the second in 136, and the third in 132 — you are dreaming outright. Why should I be struck dumb, except at your incompetence, at the fatuous dullness of your mind, and at your remarkable stupidity in every department, seeing that I have heard nothing new from you, nor learned anything? Have you not read in my *Castigatio* of your *Elenchus* that, before your *Elenchus* was published, we in the commission on the correction of the Calendar had already rejected this method of intercalation (which you falsely make out to be your own) as less convenient — precisely because it cannot be retained in the memory so easily — and that we preferred our own, which proceeds by centuries of years, for many reasons? For ours is

both easier and keeps the equinox more correctly in its place, and it closely resembles the customary intercalation applied every fourth year. Attend, if you please, to what we wrote in the exposition of the Calendar, chapter 5, Num. 18, 19 and 20. There I demonstrated most clearly that if the equation proceeding by centuries of years is used, the equinox cannot recede so far from its place as it can if the equation is set up by intervals of 132, 134 and 136 years. In the former case it recedes at most by 18 hours — that is, in the first century; for in the second it stands only twelve hours from its original place, and in the third only six. But on that other equation of yours it recedes by a full day three times in every span of 400 years. Let the prudent reader now judge which is the greater fault: to force the equinox to recede from its place by 6, or 12, or at most 18 hours, or by a full 24.

Why, then, does Scaliger shout and bellow that we are rushing the intercalation ahead of time? We do not rush the intercalation at all; rather we force it, so to speak, always to keep the middle road between rushing and delaying the intercalation. Nor is Scaliger right in asserting that intercalation is to be made only when the hours and minutes have made up a whole day. Do you not notice, Scaliger, that you are fighting against the whole company of astronomers and against every nation? Do you not see that everyone applies the intercalation every fourth year at about the beginning of the fourth (that is, the bissextile) year — near the end of February, in other words (as was done in this bissextile year 1608 as well) — when the equinox has slipped from its place towards the end of the month by only 18 hours, and not at about the end of that same year, when the equinox will by then have receded from its place by 24 hours? Have you not observed that the Arabs follow very nearly the same method of intercalation in their equation of the lunar year? For they never wait until a whole day accumulates from the omitted hours; rather, whenever a number greater than 12 is made up out of those hours, they institute an intercalary year, adding one day to the lunar year of 354 days — a year they call *embolismic*. Campanus is a witness to this in his *Computus maior*, and Paulus Middelburgensis [Paul of Middelburg], book 2 of his *Paulina*. Certainly, if you do not know these things, you do not deserve to be trusted in this business of the Calendar.

I will bring forward one man from among the recent writers who also undertook to correct the Gregorian Calendar: Franciscus Vieta [François Viète] — in mathematical matters you could not so much as be his pupil — who did not dare to find fault with our equation of the equinox, but embraced it as thoroughly accurate. Nor did he fear that utterly empty argument of yours, *therefore four are*

three, and three are four, which is judged wholly unworthy of a serious man who has serious matters at heart.

T H E O T H E R heads of the correction of the Calendar which displease Scaliger have been confirmed by us both in the *Apologia* against Maestlin and in the *Castigatio* of Scaliger, and finally in the exposition of the new Calendar — so that it is truly astonishing that he should lay aside all shame and repeat the same things so impudently, when he neither refutes my arguments nor even appears to have taken them in. He thought he had done enough for himself and his own party if he could rave against me insolently and abusively, less than sober. Immortal God, how magnificently he brags about his own Calendar, and proclaims that there is no way at all — none whatever — by which the Calendar can be corrected except the one he himself has taught! What a man: not merely frivolous, but (what is worse) deceitful and dishonest, courting a reputation for cleverness from nothing but the malicious foulness of his language and the barren wickedness of his opinions. How true this is, my *Castigatio*, published long since against his own *Castigatio*, shows: its chief heads we have repeated at the end of the exposition of the Calendar. There I showed most fully that his Calendar teems with countless errors — which is what happens to those who desert the truth — and that by it Easter is almost always celebrated unlawfully, so that it is plainly empty and futile, and the credit for glory which Scaliger arrogantly claims for himself is inglorious and false.

N E X T he attacks our arrangement of the epacts in the Calendar bitterly and abusively, and reproaches us sharply for having assigned epact xxx, or *, to the first day of March, when — as he would have it — we ought to have entered xxix. In this he not only errs disgracefully, since the lunations, on our arrangement of the epacts, alternate at 30 and 29 days as reason requires; he even contradicts himself, since he

[printed page number 58]

himself, in the Calendar of his own *Elenchus*, likewise set against the first day of March the epact xxx, which in his own system the mark o signifies. So he is wrong either here or there. Our excellent helmsman could neither slip past Scylla nor avoid Charybdis. This at any rate makes it clear that he arranges the epacts not on any settled view of the matter but at random, at his own whim. Did he not see that he was contradicting himself? He really ought to have observed the old proverb:

mendacem esse memorem.

that a liar must have a good memory.

There is this to add as well. Since the epacts are the indicators of the new moons, any epact whatever can be assigned to the first day of the month, provided the equation of the epacts is then properly set up. Indeed the epacts can be entered in the Calendar in forward order rather than in retrograde order — as I showed in my *Castigatio* of Scaliger's *Elenchus* — even though on that arrangement they would not then preserve the true reckoning of the epacts. Scaliger therefore labours in vain to prove that the epact xxix, and not xxx, must be attached to the first day of March; all the more so because our own ordering of the epacts indicates the new moons more correctly, according to the usage of the Church, than it would if xxix occupied the place of the first day of March. That is evident from that great table of Movable Feasts set out in the exposition of the Calendar — the table he cannot bring himself to look at with a kindly and untroubled eye.

I N T H E end he repeats the same old refrain about the two epacts xxiiii and xxv, in red, prefixed to the same day in six months; and likewise about the epact xxvi in red and 25 in black, which also occupy the same day above those two. Each of these pairs he calls a monstrous partnership of two epacts. Who could fail to marvel at the man's stupidity here, seeing that he does not understand that this has to be done because of the alternating lunations of 30 and 29 days? For unless it is done, all the lunations will contain 30 days, as I set out at length in the exposition of the Calendar. Did you not notice, Scaliger, that in the placing of the golden numbers in the Calendar the smaller numbers are always set immediately below the larger ones, with six places excepted? What, I ask you, is the reason for that variation? Is it not so that the lunations may be constituted alternately of 30 and 29 days? Since, then, the two associated epacts achieve exactly the same result, they cannot be faulted without the arrangement of the golden numbers being faulted too — and what could be said that is more absurd than that? Weigh a little more attentively and carefully, if you please, the thirty Calendars of the golden numbers in chapter 15 of the exposition of the Calendar, where I taught how the golden numbers are extracted from the epacts. If you do that, I have no doubt you will shake off this gross ignorance of yours. The thing is plainer than a man of sound mind could deny.

B U T what am I doing? I am teaching Scaliger why two epacts are paired in the Calendar for six months, as though he did not know it himself. Did he not himself also, in the Calendar he constructed in the *Elenchus*, set two epacts, o and xxix, against the same day in six months? And quite prudently so: for otherwise all the lunations would comprise 30 days. Nor can he say that o is not an epact on the

ground that it is not a number, since it is equivalent to the number 30, so that in place of the sign o the epact xxx could be written. Let the kindly reader see, then, how candidly Scaliger conducts himself, when he censures in others what he could not avoid himself. Yet in this respect his arrangement of the epacts is worse than ours: although he threw these two epacts, o and xxix, onto a single day in six months, so that the lunations should be constituted alternately of 30 and 29 days, he nevertheless did not place above them the epact o in the other colour, beside the epact i, in the way that we placed the epact xxv, in a different colour, beside the epact xxvi.

For it is out of ignorance of this point — and in truth the exceedingly acute mind of Scaliger was not very quick to grasp the reason for it — that he is very often driven to throw two new moons together onto the same day within one and the same nineteen-year cycle, which is utterly absurd and contrary to all the computists. And this happens to him whenever the character of the epact is one of these: XII, XXIII, IV, XV, XXVI, VII, XVIII, XXIX. For then both epacts, o and xxix, have to be taken within the same nineteen-year cycle. Had he written the epact o in a different colour beside the epact i, he would have avoided this drawback: for with a golden number greater than xi, the epact o in the different colour would have to be taken — just as we prescribe that with a golden number greater than xi the epact 25 in black is to be used. Behold the acuteness of Scaliger, who failed to understand a thing so necessary, and without which the new moons cannot be regulated!

And so anyone at all would approve those two partnerships of epacts, the one of unlike colour and the other of like colour, if only he had any grasp of this excellent doctrine. Nor do we shift the Paschal limits of the Council of Nicaea from their place by means of our epacts, as he falsely and slanderously charges against us; we preserve them most scrupulously, as is right. Our great table of the movable feasts bears witness to this. Where, in that table, has Scaliger found Easter celebrated at any time after 25 April? Let him point out a single instance, and he will be my great Apollo. For with the golden number III current and the epact xxiii in this century, the Paschal Luna xiv does not fall on 19 April, as he falsely asserts (it is his native gift to be ready to deceive), but on 21 March. Let me add one point here. Scaliger holds that the Paschal limit is the full moon, that is, Luna xv. Since, then, the last limit falls on 18 April, who does not see that if that day should be a Sunday, Easter would then be celebrated on Luna xxii — which, on his own testimony too, is against the ordinances of the Church? Let him now chatter and bellow:

Quis concolorium Epactarum, quis discolorium paria sine risu aspicere potest? Consulat Clavius Calendarium nostrum, nulla portenta in illa reperiet, non paria Epactarum, non Epactas nigras, non illam vltimam atram, & nefastam 19. in fine anni, quam sine stomacho neque videre, neque cogitare possumus.

Who can look without laughing at these pairs of epacts of like colour, and of unlike colour? Let Clavius consult our Calendar: he will find no monstrosities in it, no pairs of epacts, no black epacts, none of that last dark and accursed 19 at the end of the year, which we can neither look at nor think of without disgust.

If your own pair of epacts of like colour can be looked at without laughter, why does our pair of like colour offend you? I have consulted your Calendar. Good God, how many monstrosities I detected in it! First I looked at the reckless arrangement of the epacts, since on it Easter is not correctly celebrated in a great many years, as I showed in my examination of the *Elenchus*; so there is no need to repeat the same errors here. Next, I see that you very often force two new moons onto the same day, against all the computists and against the reckoning of the Moon, as I said a little earlier. And I see that, because the dark epact xix is neglected at the end of the year, you set up a single lunation of 59 days whenever the golden number XIX coincides with the epact xix, as has happened in this century. For from 30 January inclusive to 30 March exclusive — where the new moon is indicated by the epact i, which is then to be taken — 59 days are counted. What more absurd or more monstrous thing could be devised? You will certainly not meet with this monstrosity in our Calendar.

C O M E now, let us look into whether, in that Calendar of his which he has celebrated with so many eulogies, a lunation of 31 days in a bissextile year is avoided — the lunation which he himself wrongly calls a monstrosity. For a thing cannot be called a monstrosity when it can in no way be avoided and when all the computists necessarily admit it, a matter on which I have written at greater length against Franciscus Vieta in the exposition of the Calendar, chapter 24. But if it must be called a monstrosity, then it

[printed page number 59]

must, then this monstrous Scaliger cannot escape a just reprimand, since he most openly admits that very same thing so often in his own Calendar. For the epact xxiii on 26 January, together with the epacts that follow as far as the epact xxiiii on 24 February, makes a lunation of 31 days in a bissextile year: because from 26 January inclusive to 25 February exclusive 30 days are counted, and with the

intercalary day, 31. In the same way, from 18 February inclusive — where the epact is o — to 20 March exclusive, where the epact of the following year is xi, there are 30 days, and with the intercalary day 31; and so with the rest. There, then, you see how truly you exalt your Calendar to the skies with all that praise! Are you not ashamed of such vaunting and such false boasting? You are plainly blind if you do not see so many monsters and monstrosities in your own Calendar. So why do you shout,

quis vnquam legit, vidit, audiuit, mensem Lunarem esse 31. dierum?

whoever read, saw, or heard that a lunar month is one of 31 days?

— and call this an asinine error? Then you are the ass, since you commit it so often.

A N D besides, these absurdities and slanders which I have refuted are contained in the *Prolegomena*. He then repeats them, to the point of nausea, in the *Canons*, with a thousand insults and abusive terms, so that it wearies me to hammer at them here again. In the whole book he shouts and bellows nothing else but *Clavius, & Calendarij reformatores hoc ignorarunt* — *Clavius and the reformers of the Calendar were ignorant of this* — while producing nothing solid, of the kind he contends we are ignorant of, from which the true reckoning of the Calendar might be gathered. His own Calendar, crammed with so many errors, is the proof of that. For if those matters of which he reproaches us with ignorance really are to the purpose, how does it come about that he himself could not, from them, put together a Calendar without error? I pass over the fact that he fastens a great many things on me by slander — among the rest, that I deny the Moon's mean motion is to be taken as the standard for the epacts. That this is utterly false is proclaimed by that great table of ours of the movable feasts, in which I always directed the Lunæ xiiii to the mean full moons, as I did in most other places too. Pass the same judgement on the other slanders with which he assails me. The prudent reader will have no difficulty in recognizing that what I have said here is true, if he attentively considers what I have taught in the exposition of the Calendar, and sets it in some order alongside the errors that gush out of Scaliger's Calendar — errors which I catalogued both in my *Castigatio* of the *Elenchus* and at the end of the Calendar.

B U T so that I may at last gather up the wreckage of your shipwreck, Joseph Scaliger, this is the warning I want to give you: a plank still remains by which, since you cannot save the cargo, you may at least save your shipwrecked and storm-tossed body. And truly, if there is any mind or judgement in you, you will reflect that you are already rehearsing for death; that a judgement greater than

any human one is hanging over you, from which your talkativeness will never free you. And if my salutary warnings do not touch you, at least, in God's name, see this much: that not long from now you will pay the penalty for all your crimes; that all the powers below have already conspired for your ruin, and are waiting for that last hour in which you spew out your guilty and rotting spirit. Tear yourself away from so great a plague. Assent to the Church; do not spurn the decrees of the Popes; do not turn away from Catholics; subscribe to the truth. I want Clavius to have no part in moving you: let the silent outcry of conscience move you, the mind of the faithful, the authority of the Doctors, the judgement of Posterity. If you do not approve my advice, then test my arguments and weigh their force. Reckon it over quietly with yourself, with no onlookers by, and still more with none of those disturbances of feeling that blind the mind's edge — reckon over the inconsistency, the frivolity, the falsity of your own statements. For here is the fruit not so much of this *Apologia* as of a just complaint: the salvation of your soul; namely, that at long last, freed from those hellish excesses, you should put off the counterfeit mask of the wise man which you would like to be seen wearing, and reveal yourself openly to everyone as you really are. For my own part, since you have ruined both your reputation and the health of your soul, my dearest wish would be that — since you cannot look to your reputation, or can do so only with difficulty — you should at least be willing to keep your soul safe from the eternal punishments that threaten it.

Listen to Augustine; and let this be my last warning. *Rise up, man, against yourself, before the tribunal of your own mind; and when judgement has been set up in your heart, let thought be there as prosecutor, conscience as witness, fear as executioner.* And if in fact you do this, and, as Ambrose advises, make good in this brief span of life the punishments of hell that are to come, you will free yourself from the eternal judgement. [Margin: Lib. ad Virg.cap. 18.] For the loss of your name in this mortal life would be a small thing, and no harm at all, provided you were willing to think with the Church and — freed from the hands of those most cruel enemies who revel in your destruction — to subscribe to the ordinances of the Fathers and to the propositions of the true faith.

FINIS.

REFVTATIO CYCLOMETRIÆ IOSEPHI SCALIGERI

Refutation of the Cyclometry of Joseph Scaliger

of a newly restarted pagination), no signature, no catchword, no ornament. Display capitals, centred. Transcribed verbatim, line for line, as printed:]

REFVTATIO CYCLOMETRIÆ IOSEPHI SCA- LIGERI,

Auctore

CHRISTOPHORO CLAVIO BAMBERGENSI, E SOCIE- TATE IESV.

Refutation of the Cyclometry of Joseph Scaliger [Joseph Justus Scaliger], by Christoph Clavius of Bamberg, of the Society of Jesus.

REFVTATIO CYCLO-METRIÆ IOSEPHI SCALIGERI, *Auctore*
CHRISTOPHORO CLAVIO BAMBERGENSI, E SOCIE-TATE IESV.

Refutation of the Cyclometry of Joseph Scaliger, by Christoph Clavius of Bamberg, of the Society of Jesus.

Joseph Scaliger's *Cyclometrica Elementa* are of such a quality that they are altogether unworthy of a mathematician. He was quite capable, to be sure, of fooling the eyes of the unskilled — with big drawings of figures, the kind one sees traced in the mathematicians' sand, and by scattering through the whole book the alphabetic letters that mark the steps of a demonstration, letters he painted in red chalk and vermilion so that you should miss nothing of Suffenus — until they took him for a mathematician, since his works so ostentatiously wore what looked like the face of mathematical work. But it will not do at all: *if a sow prints the letter A on the ground with her snout* — as the man says (if you remember him, Scaliger) — *no one in his senses will on that account suspect that the Andromache of Ennius could be written out by her.* [Margin: Cic. 1. de Diuinat. — Cicero, *De Divinatione* I.] Nor, if you — no little cleverer than a sow — draw both A and B, indeed all the Greek letters together, and the Latin ones too, in vermilion and in every pigment there is, will it immediately follow that you can persuade me, or any mathematician, that you are able to write Archimedes' *Equiponderantia* [On Plane Equilibriums], or that work of his you tear at so savagely, the *Measurement of the Circle*. And in truth Scaliger's *Cyclometrica* is so full — I will not say of geometrical errors, but, in all honesty, of outrages — that apart from the title, which he drew from the Greek so as not to look unlearned to the general run of men of letters, he has produced nothing that smells of mathematics.

For nearly ten years now I have often laughed at these outrages, yet I would never have exposed them publicly. Partly because I think it only right to encourage a gifted man — which is what I judged Scaliger to be — even in his

bare attempts; and partly because in this matter he did no injury to the commonwealth, as he did before when he impudently attacked the Roman, that is, the Ecclesiastical, Calendar. Here he wronged only himself, or a handful of mathematicians. But in a book he lately cobbled together this ungovernable man showed such arrogance toward all good men — arrogance that did not spare even the saints who reign with Christ — and such impudence of tongue toward me in particular, though I had done nothing to deserve it, that by slandering every decent thing he has now wrung from me the very rebuke of his many faults that he could not wring from me by thinking ill of mathematicians: a plain rebuke, and one that suits not only my temperament but my toothless years as well. But look, reader, I beg you, at the reason Scaliger fell upon me: it is because I defended a calendar that is Roman, papal — indeed, whether Scaliger likes it or not, genuinely mathematical. What is one to do with such a man? By my way of life I am papal, by religion Roman, and by inclination — if not by knowledge — a mathematician. If Scaliger shudders at the first two, the third he professes himself. On that count at least he should have made allowance for my study. And if he would not, he should at least have brought against my work not merely a licence to abuse, but even some new argument that I had not already demolished long ago in the *Elenchus*. But in fact he chose to attack not my work but me; whether wisely, whether rightly, posterity will judge. Meanwhile I shall not let him find in Clavius the imitator of himself that he deserved. Scaliger's mistakes I shall run through with a mathematician's pen, which is easy enough to do; Scaliger himself — though that would be little harder — I shall leave untouched. Perhaps he will learn either to know more or to write less; he will learn not to think himself the only human being alive; and unless he is utterly incapable of learning it, he will learn that contests in literary matters can be fought even by a man who is no gladiator.

Since it would take too long to recount and refute everything he has got wrong in geometry, I have judged it worth the trouble to expose, in selected passages only, the chief and truly childish outrages of so great a mathematician. From these the discerning reader will easily form a judgement about the rest — especially since most of this man's absurdities have already been learnedly refuted by *Franciscus Vieta* [François Viète] the Frenchman and *Adrianus Romanus* [Adriaan van Roomen] the Netherlander, both outstanding mathematicians, and by others elsewhere too.

And so that in this correction of a slippery man there may be no room left for shuffling and escape, I shall set the whole business out as follows: first Scaliger's own words, with a note of the passages they are taken from; then, placed beneath

Scaliger's words, my own verdict on what he says. Many know that I did just this, and not without profit to my readers, when I corrected the same man's insufferable *Elenchus*. Let us begin, then, with the dedicatory letter.

SCALIGER.

In epistola dedicatoria ad ordines Hollandiæ, &c. [In the dedicatory letter to the Estates of Holland, etc.]

I hold that this concerns not only my own standing, but that of my ancestors as well — their greatness and their glory: that I, very nearly the last of our most ancient and most illustrious family, should not go without the testimonials of such great men, testimonials which my ancestors themselves never lacked, on account of their services and their brilliant achievements.

CLAVIVS.

How much you boast about yourself in this letter, Joseph Scaliger — and how vaingloriously, how pompously! And, I suppose, in order to prove yourself no bad panegyrist, you began from the cradle. But believe me, that effort was unnecessary. It is well known that spewing out a panegyric on oneself and Philipppics — or something still more caustic — against others takes one and the same talent, and one and the same kind of man. And so you stirred the bile of a man who is not unlearned, Gaspar Scioppius [Kaspar Schoppe], who traced the origins of that most illustrious and most ancient family of yours — you know where he traced them to. How truly, I cannot say: I am a man with no expertise in history or genealogy, least of all obscure genealogy. He certainly won applause from the literary theatre, in which that line of yours has by now been chanted by your family so many times —

————— *& mi genus ab Ioue summo.* [and my line too is from Jove most high.]

— that it had stirred up who knows how much resentment against players who were far from bad.

SCALIGER *ibid.*

It is my task, therefore, to show not only how gladly I allowed myself to be persuaded, but also to take pains that whoever reads my works hereafter may say boldly that the fruit he gathers from your judgements is no empty one.

CLAVIVS.

On the contrary, it is my task — and every mathematician's — to show that you have persuaded no one of any of the things you urge, and how freely everyone may admit that even wise men's judgement of another man's ability is sometimes empty.

SCALIGER *ibid.*

The credit of this science is so sure that a man who does not abuse it never wastes his labour, whereas a man who uses it forcibly — which is what those ancients Antipho, Bryso, and Hippocrates of Chios did in this matter, and, to my unending astonishment, the great Archimedes as well — gets nothing out of his demonstrations except to look as though he had meant to go wrong demonstratively.

CLAVIVS.

Did I not point out that it belongs to one and the same dog to fawn on itself and to bark at others or tear them apart? That you have not wasted your labour, because you do not abuse the science of mathematics, is as empty a piece of self-flattery as your mauling of the greatest of men, Archimedes — to say nothing of the rest — for having used that science forcibly is unjust. But of course, if your own light requires Archimedes' darkness, then I prophesy this for you, Joseph Scaliger, and I am no bad prophet:

————— *In æternam* ————— [Into everlasting (night) —————]

[Margin: *Æneid.* 12.]

You know the rest.

SCALIGER *ibid.*

But we fall as far short of those ancients in knowledge as we do in natural ability.

CLAVIVS.

Welcome to good sense and a sound mind: my congratulations. If only it would last.

SCALIGER *ibid.*

This much we can promise with certainty: that up to now they are surpassed by us, because we have demonstrated everything not παραλογισικῶς [Greek: paralogistikōs, "fallaciously," by way of a paralogism] as they did, but κατὰ τὸν

ἐπιστημονικὸν λόγον [Greek: *kata ton epistēmonikon logon*, "according to strictly scientific reasoning"].

CLAVIVS.

Hah — back to your old self so quickly, my Scaliger? So they argued fallaciously, and you alone according to strictly scientific reasoning? So may God grant you a sounder mind, as surely as there is nothing sound in you and everything is sound in Archimedes. And you will not deny it — if you understand what I write — noble as is the spirit you draw from that most illustrious and most ancient family. But let me for once raise a question about wording. I have never met anyone more Greek than you, Joseph Scaliger: the title of the whole book is Greek; the headings of the propositions and problems are Greek; the letter itself is half-Greek from beginning to end. I am not finding fault; I am asking the reason. Some suggest the temper of a man fishing for praise among the lowest rabble. Others, a taste for showing off. Most think they have said it all when they say: frivolity. For my part, I pronounce no verdict — but I do give this warning: your work will stand no higher with geometers if it circulates half in Greek than if it circulates in Latin.

SCALIGER *ibid.*

And so with confident modesty we declare that in the discovery of the thing itself, too, they are surpassed by us by a long interval — the thing which, after it had eluded them for so long, we at last set before your eyes after so many centuries, and now dedicate for the first time to your name.

CLAVIVS.

Do you call this modesty, Joseph? Then what counts with you as arrogance? What as impudence? Whom, I ask you, out of the whole number of learned men, have you heard, seen, or read setting himself above everyone with modesty of this sort? — unless perhaps someone from among the Scali-

gers. But the most illustrious progeny of that most ancient family of yours gives you spirits that are more than confident. Perhaps you are afraid of the old line:

————— *Degeneres animos timor arguit.* [Fear betrays a degenerate spirit.]

Away with you, I beg: take that "confidence" of yours out of the world of letters at last — it is not, as you call it, "confident modesty." And what is it you offer? Will you display before our eyes something that eluded Archimedes, that eluded so many centuries of learned men? You are mistaken. What you will display is not

what eluded Archimedes, but what Archimedes successfully steered clear of as though it were a reef: monstrosities and prodigies of faulty argumentation. Do not suppose, reader, that I say this as an exaggeration. Were it worth the trouble, I could swear the most solemn oath that in this whole abortion of Scaliger's there is not one piece of reasoning that does not lie; and if I am wrong, I do not refuse to stand as a liar in your eyes, reader.

SCALIGER *ibid.*

Receive, then, most noble and most eminent gentlemen, a work greater than the ill-disposed expect.

CLAVIVS.

You have prophesied truly. Anyone who wishes you ill, Scaliger, would never — if I judge rightly — have expected from you so much material, not for correcting you, but for laughing at you. I shall not do that. You will find in me no ill-wisher, but a friendly monitor and a pointer-out of your mistakes, careful and painstaking, as befits a man of my years and calling — however you may in the end have deserved of me. Let us pass on, then, to the Prolegomena.

SCALIGER *in Prolegomenis.* [in the Prolegomena]

About the straight line equal to the perimeter they took little trouble — indeed they took no interest in it at all. For carters too may observe that line every day, since the wheel cuts it off from any track it makes when it has revolved round to the same point on itself from which it first began to move.

CLAVIVS.

You will have gained nothing worth the effort, Scaliger, by lying so openly. Who has ever heard the name of mathematicians without also hearing that a great many of them, and the foremost of them in knowledge, laboured at the search for a straight line equal to the perimeter of a circle? And what else is Archimedes about in the book on Spirals, Proposition 18? For Dinostratus, in devising the quadratrix with such great labour, wasted his effort unless he was seeking a line equal to the perimeter of the circle. Nor did they do this without reason: once a straight line equal to the circle's perimeter has been found, the circle is squared at once, as Archimedes demonstrated with the greatest acuteness in the little book on the measurement of the circle, Proposition 1. But you flatly deny it. What has that to do with the case? If, in your zeal to contradict everybody, you were to assert that the sun does not shine, I should not conclude that the sun lacked light, but that you lacked either eyes or something better than eyes.

But what am I to say about that splendid piece of mathematics — that carters can observe every day a straight line equal to the circumference of a circle in the track which the wheel cuts off in a single revolution? What a delightful mathematician, one to whom there is no access except through carters and cab-drivers, just as once there was no access to Plato except through mathematicians! So a carter, by the chance revolution of a wheel in mud and filth, will teach what Archimedes and Dinostratus could not teach with the impressions of a precise stylus in learned dust: namely, which straight line is equal to the perimeter of a circle. You are afraid, I suppose — born and bred as you are for glory — of being hissed off the stage for so foul a disgrace. I will free you from that fear, if I make it plain that not even you assent to so great an absurdity. Come, then: these are your own words, in the Prolegomena itself, if you acknowledge them. *For if I find with a compass that one magnitude is equal to another magnitude, it does not immediately follow that it is equal to that magnitude; indeed I shall refuse to believe it true, if it cannot be demonstrated ἐπιστημονικῶς* [Greek: *epistēmonikōs*, "scientifically," by strict demonstration]. By the same reasoning, then, granted that I find from a single revolution of a wheel a straight line equal to the circumference, it does not immediately follow that it is equal to it, unless a demonstration proves it — since one can go wrong in that revolution in many ways, as even a man who has had nothing demonstrated to him scientifically knows almost more than scientifically.

S C A L I G E R in *Prolegomenis*.

This the divine Archimedes does pursue — though unsuccessfully, and with the grossest errors — in the third demonstration of his Cyclometricum, where he attempts to express that length in numbers.

C L A V I V S.

In what, then, is he divine, if he is so unsuccessful and so full of error? No: he is divine in mathematics through and through; as for you, I do not know whether you are unsuccessful, but you are certainly most full of error. Learn, rather, what that divine genius set out to do in the demonstration, and how successfully he achieved it. His aim was to show which ratio in numbers does not fall far short of the ratio of the circumference to the diameter — not which straight line is equal to the circumference; and that he accomplished with complete success. For he demonstrated that the ratio of the circumference to the diameter is a little less than three and one-seventh [tripla sesquiseptima], that is, three and ten seventieths [tripla superdecupartiente septuagesimas], but greater than three and ten seventy-firsts [superdecupartiente septuagesimas primas]. I

demonstrated this in the *Geometria practica*, book 4, chapter 6 — although you most erroneously declare that the ratio is greater than three and one-seventh, contrary to the judgement of all mathematicians, taken in by a worthless argument drawn from the dregs of carters, because you have entirely failed to understand Archimedes' demonstration.

SCALIGER in *Prolegomenis*.

*For there is no kinship between τῷ ἐμβαδῷ [Greek: τοῦ ἐμβαδοῦ, *tou embadou*, "the area" — both words printed with the ou-ligature sort] and the rectilinear figure contained by the semidiameter and the perimeter.*

CLAVIUS.

The kinship is so close that this rectilinear figure is wholly equal to the circle, as Archimedes demonstrated — whatever you may bark to the contrarium [recte: contrarium, "to the contrary"].

SCALIGER in *Prolegomenis*.

*which he himself wrongly called the τετραγωνίζουσα [Greek: τετραγωνίζουσαν, *tetragōnizousan*, "the squaring line," the quadratrix], since it contributes nothing to τετραγωνισμόν [Greek: *tetragōnismōn*, "quadrature"], as we have shown elsewhere.*

CLAVIUS.

All of this is false. Dinostratus did rightly call that line the quadratrix, since by means of it the circle is squared, as I demonstrated in my commentary on Euclid, book 6. You, on the other hand, will demonstrate that it contributes nothing to the quadrature on the Greek Kalends.

SCALIGER in *Prolegomenis*.

We, then, have achieved more than Dinostratus himself and more than Sporus. For we have shown both what it is and how it can be described; and besides, we have not only detected the point itself, but have also taught what it is.

CLAVIUS.

Good heavens, how magnificently you boast and parade yourself! I will say how things really stand. At my present age, and being a man of anything but a frivolous temper, I never meet with silly boasting of this sort without laughing from the heart. For into my mind come the Thrasos and braggart soldiers whom I have long — from boyhood, that is — heard on the stage, and never without

laughter. What else is that line of yours: "We, then, have achieved more than Dinostratus himself and more than Sporus"? Exactly so:

Cum quo bellator Mars haud ausit dicere Neque æquiparare suas virtutes ad tuas.

[The man with whom warrior Mars would not dare to speak, nor match his own prowess against yours.]

Have done, Scaliger, I beg you. This boasting of yours is your enemy. Look at who you are and at the men you are being carried against; consider not what you can promise but what you can deliver. So you have described the quadratrix (to talk Greek along with you); you have not only detected the point but have also taught what it is. Where, pray? Certainly nowhere in this book — as I shall show, clearer than daylight, in the proper place.

SCALIGER in *Prolegomenis*.

For just as the famous Bryson used to say that an equal can be found if a greater and a less are established, so Archimedes supposed that if the circle proposed were neither greater nor less than the triangle proposed, then it was equal — which is plainly faulty, as we have demonstrated elsewhere.

CLAVIUS.

Archimedes' inference is not faulty, as you slanderously claim, since Euclid used the same kind of argument more than once. Nor do you refute that inference correctly in your *Diatriba*; you commit a thoroughly gross paralogism instead, as I showed in the *Geometria practica*, book 4, chapter 6. And are you not ashamed — you who profess to be a mathematician — to deny that a magnitude is equal to a magnitude than which it is neither greater nor less? For if it is not equal, it will certainly be unequal, and therefore either greater or less. Do you see where your own paralogism has driven you — the paralogism by which you suppose you have overthrown Archimedes' argument? But no more of this here. I refer you to that scholium of mine in book 4 of the *Geometria practica*. There you will learn, if you are willing and able, that you must not in future be a laughing-stock to mathematicians.

SCALIGER in *Prolegomenis*.

He dared to pronounce a thoroughly absurd thing: namely, that the perimeter of a circle falls short, beyond the triple, by a seventh part of the length of the diameter.

CLAVIUS.

On the contrary, it is you — for why should I not be allowed to say of you, on the side of truth, what you were allowed to say of Archimedes against the truth? — it is you, I say, who pronounce most absurdly, when you pronounce that Archimedes said something thoroughly absurd about the ratio of a circle's circumference to that circle's diameter. But perhaps, as commonly happens with perverse minds, sound and true mathematical demonstrations count with you as thoroughly absurd — such as the demonstration by which Archimedes proved that ratio to be less than three and one-seventh. That demonstration you will not shake, however many engines of abuse you bring up against it.

SCALIGER in *Prolegomenis*.

If anyone is an admirer and a student of Archimedes' divine genius, I am he. But let young men beware of the reefs of his τῶν εἰς ἀδύνατον ἀπαγωγῶν [Greek: tōn eis adynaton apagōgōn, "reductions to the impossible"]. For he is suspect, and we have in fact detected not a few utterly absurd errors of his — which can be spoken of at a more convenient time and place.

CLAVIUS.

A fine admirer of Archimedes you are, to be sure, when you proclaim that you have detected utterly absurd errors in him and warn young men to beware of his reefs and of his reductions to the impossible. Meanwhile — scrupulously Latin here, ready Greekling though you are — you have steered clear of the reef of the word *Impossibilis* more successfully than you have steered clear of the reef of empty talk, or of ignorance in mathematics. For what is sharper than Archimedes' reductions to the impossible? What is better fitted to knock a man off his footing and send a shameless fellow like you headlong? And if that is not so, come, great geometer: bring out one of these utter absurdities where we can all see it. But you have brought out some already — and you will bring them out at a far more convenient place and time. Very well: at that same place and time I shall refute them. For the present, what you have brought out amounts, if I remember rightly, to these two: one concerning the area of the circle, and one concerning the ratio of the circum-

— the ratio of the circumference to the diameter; and then a third, *propos.* 19, on the power of the circle, in the area of the parabola. Against these I need nothing more, for now, than a word to check your scolding: Archimedes committed no fault in these matters, you a great many childish ones. That this is not said idly you will learn below. So let young men beware of the reefs, the quicksands and the Scyllas of your παραλογισμῶν [Greek: *paralogismōn*, "fallacious inferences" —

set with the παρ-ligature sort]. In Archimedes there is nothing to beware of: everything in him is deep, certainly, but safe — calm water.

SCALIGER in *Prolegomenis*.

And so, when we accept magnitudes of this kind as true because we cannot demonstrate them (but detect them with the compasses alone), we bankrupt our own good name and brazen it out, extricating ourselves smartly by some shameless reduction to the impossible. Archimedes resorts to this so constantly that he seems not to hold a kingship in geometry but to run a tyranny. And so, as we have warned so many times, not a few of his conclusions are falsely drawn.

CLAVIVS.

It is your own name, Scaliger, that you have bankrupted. Our Janus here — the exchange where geometers and astronomers keep their accounts — has you posted as a defaulter. Go and settle accounts with the geometers: if you find a single one who will trust you with a farthing, call me a liar. And you charge *Archimedes* with shamelessness? *Archimedes* with tyranny? This, to be sure, is what it means to have brazened it out in earnest, and by the most shameless abuse to run a filthy tyranny over men of talent. But it will not last long, believe me. I see Brutuses standing ready — men who, seeing that patience gains nothing against that iron face of yours, have resolved to settle the matter with a sharpened stylus and toothed paper.

SCALIGER in *Prolegomenis*.

It is enough for me that the thing itself, which I have accomplished by the kindness of Almighty God, clears me of every suspicion of ἀλαζονείας [Greek: alazoneias, "imposture, boastful pretension"].

CLAVIVS.

Do you really claim to have accomplished *the thing itself* — that is, the quadrature? I refute nothing. Your own fallacy-ridden little book refutes you. Carry on; you will learn.

SCALIGER in *Prolegomenis*.

In the Cyclodynamicum, which I made the second part of the Cyclometricum, the squaring both of the circle itself and of its segments is carried out γεωμετρικῶς [Greek: geōmetrikōs, "geometrically"] at any rate, and καὶ κατὰ [printed with the abbreviated κ-with-stroke sort] τὸν ἐπισημονικὸν λόγον [Greek: epistēmonikon logon, "the demonstrative/scientific account" — set with the ς (στ) contraction

sort], not τυραννικῶς [Greek: *tyrannikōs*, "tyrannically"], as Archimedes does. For arithmetic has no place here.

CLAVIVS.

It is you who run a tyranny in a matter of this kind, not Archimedes, since you demonstrate nothing solid. Archimedes never asserted that the circle can truly be squared by numbers; he only showed how little a square found by numbers falls short of the circle's area. So much for the things you wrote in the Prolegomena, whether over-arrogantly and boastfully or simply falsely. Now let us look, step by step, at some of your fallacies, so that everyone may understand that you are altogether inexperienced in geometry, and ignorant of it.

SCALIGER in *Prolegomenis*.

About the circle IB, whose centre is G, let the square FA be described; and in the same circle let the square IB be inscribed. Again, let the square HE be obtained about the same centre G, its side EK being equal to the rectangle contained by BM, AL — that is, by the sides of the inscribed and of the circumscribing squares. With the diameter FA drawn, let the straight lines NB, OE, produced, meet the side LA; likewise let the straight lines KE, MB, produced, meet the side AP. By VI.24 the rectangles BA, BE and EA are all squares. Let the straight line CD be joined. The angles BCD, BDC will be half right angles, while the angle CRE is a right angle. Therefore the angle REC is half a right angle, by I.32. Hence, by 6 of the same book, the straight lines RC, RE are equal. In the same way it will be shown that the straight lines QE, QD are equal. Therefore the parallelograms CE, ED are squares, and equal to the squares BE, EA. Indeed all four squares BE, EA, CE, ED are equal to one another, by the first common notion. Therefore the diagonals BE, EA are equal as well. The square HE, then, is equally distant from the squares FA and IB; and for that reason it is a mean both in position, as has been demonstrated, and in power, from the construction. For the mean proportional was taken between the sides IM, FL, etc.

Diagram. A single woodcut set into the left half of the page, beside Scaliger's lemma. It shows a large upright square, a circle inscribed in it touching all four sides, an upright square inscribed in that circle, a third upright square concentric with them and intermediate in size, the diagonal of the outer square drawn from its lower-left to its upper-right corner, and — crowded into the lower-left corner of the outer square — a small group of short straight lines forming two small squares with their diagonals. The lines of the two smaller squares are carried out

to the left-hand and bottom sides of the outer square. All seventeen letters below are read directly off the block; no letter is supplied from the accompanying text.

- L (outside the block, above the outer square's upper-left corner): outer square's upper-left corner
- F (outside the block, above the outer square's upper-right corner): outer square's upper-right corner
- A (outside, below the outer square's lower-left corner): outer square's lower-left corner
- P (outside, below the outer square's lower-right corner): outer square's lower-right corner
- K (inside, on the left-hand vertical of the intermediate square, at its top): upper-left corner of the intermediate square
- H (inside, at the top right, just below F): upper-right corner of the intermediate square
- O (inside, at the lower right, below H): lower-right corner of the intermediate square
- M (inside, upper left, below and right of K): upper-left corner of the square inscribed in the circle
- I (inside, upper right, below H): upper-right corner of the square inscribed in the circle
- N (inside, lower right): lower-right corner of the square inscribed in the circle
- B (inside, on the drawn diagonal, below and left of centre): lower-left corner of the square inscribed in the circle
- G (at the centre of the circle, on the drawn diagonal): centre
- C (at the left, on the outer square's left-hand side, low down): endpoint of the lower horizontal carried to side LA
- D (at the bottom, on the outer square's bottom side): endpoint of the vertical carried down to side AP
- R (just right of C, inside): vertex in the small corner construction
- E (below R, inside): lower-left corner of the intermediate square
- Q (just right of and below E, inside): vertex in the small corner construction

The corner construction at A is the densest part of the block: the individual short strokes there cross at very small scale, and while the seventeen letters are legible, the exact set of line-endings inside that corner cannot be resolved cell-by-cell at native resolution [?].

CLAVIVS.

I take you up at this very entrance, Scaliger: see that you do not miss the door. I truly cannot wonder enough how a mathematician — which is what you proclaim yourself to be, however falsely — could blunder so childishly in his very first demonstration. You say you have demonstrated that the square HE is equally distant from the squares FA and IB. That is entirely false, and false on your own construction: for you make the side EK the mean proportional between the sides AL and BM. From this it follows that the side AL exceeds the side EK by a greater excess than that by which the side BM falls short of the side EK — as I said in the fourth property of the three proportionalities, among the definitions of Euclid Book 5, and as is plain in these three numbers in continued proportion, 18. 12. 8., where the excess of the greater numbers is 6 and that of the smaller is 4. But

so that you may at long last begin to learn something, I will uncover the very head of your error. It is this: you supposed that the diagonal CD passes through E, the intersection of the sides EK, EO. That is not true, except when the three sides AL, EK, BM are in arithmetic proportion — which is contrary to your own construction. Therefore, since the side EK is the mean proportional between the sides AL and BM, it is impossible for the diagonal CD to pass through the angle E; it must pass below it. In other words, that mean-proportional side will cut the diagonal BA above the diagonal CD. So your reasoning is a parallogism.

SCALIGER *in propos. 1.*

About a given finite straight line, to describe a dislocated volute [voluta luxata — Scaliger's own term]: that is, the Helix of Archimedes.

About the given finite straight line BD, bisected at E, let the circle ABCD be described. When the quadrants of its circumference have each been divided into four, the whole circumference ABCD will be divided into 16 parts, such as DF, FH, HK, and so on. When straight lines have been drawn from the centre E to the marks of those divisions, the whole circle will be divided into 16 scalpra, etc.**

And a little further on.

Let d be equal to ED, divided into 16 equal parts, by VI.9. From the straight line EF, then, let GF be taken away — that is, one sixteenth of the line d — by I.3. In the same way let IH, two sixteenths, be taken from EH, and so on, decreasing.

And a little further on.

Taking the interval GD, then, as a base, let an isosceles triangle be conceived as standing upon that base, one leg of which is equal to fifteen sixteenths of the line d — namely, to EG itself. Then with the vertex of that isosceles triangle as centre, and with the interval EG, let the arc GD be described. In the same way, when an isosceles triangle has been set up on the base IG whose side is equal to 14 sixteenths taken from the line d — that is, equal to the line EI — with the vertex of that triangle as centre and with the interval EI let the arc IG be described; and so on, until the centre E has been reached.

Diagram. A woodcut set into the right half of the upper part of the page. It shows a circle with a horizontal diameter drawn across it and sixteen straight lines radiating from the centre to the circumference. Inside the circle a second, smaller curve winds inward from the right-hand end of the diameter toward the centre, crossing the radii. Below the circle, and about as wide as it, runs a straight horizontal line closed at both ends and divided by short cross-ticks into a series of equal parts; it is lettered at its left end. Every letter listed is read directly off the block.

- A (at the top of the circle, on the circumference): top point
- K (on the circumference, upper right, between A and H): division point
- L (inside, just below and left of K, on the winding curve): point on the inner curve
- H (on the circumference, right, below K): division point
- I (inside, just below H, on the winding curve): point on the inner curve
- F (on the circumference, right, below H): division point
- G (inside, just below F, on the winding curve): point on the inner curve
- D (at the right-hand end of the horizontal diameter): endpoint of the diameter
- B (at the left-hand end of the horizontal diameter): endpoint of the diameter
- E (at the centre, where all the radii meet): centre
- M (on the circumference, lower right, above the right-hand part of the divided line): point on the circumference
- d (at the left end of the divided horizontal line beneath the circle, set as a minuscule with an ascender): the divided line
- [?] (at the very bottom of the circle, directly below E): a single letter whose sort prints reversed and does not resolve at native resolution. The accompanying text names the circle *ABCD*, so this is the position C would occupy, but the glyph itself is not legible and is not committed.

CLAVIVS.

What a delightful mathematician! If the schoolboys do not greet him with the whip, they do badly by so fine a teacher. I am amazed that you can conceive of a helix being put together out of circular arcs, when a helix made that way cannot have a uniform curvature, precisely because the arcs are different — and every two of them always form curvilinear angles at their ends, since they cut one another there if they are produced. Next, who will grant you that the arcs of those circles have to be described through the sixteenth-parts of the circumference ABCD — that is, through the lines that divide the whole circumference into 16 equal parts? Certainly, if the same circumference were divided into more equal parts, a different helix would be described, made up of smaller arcs, and it would differ from yours entirely: for these smaller arcs would both cut one another and also cut your larger arcs, at the points D, G, I, etc. So within one and the same circle different helices, unlike one another, would be described — which is utterly absurd and utterly inept.

Worse still: if the arc DG were a portion of a helix, then, if the radius of that arc were drawn from D and a perpendicular were erected to it at D, that perpendicular would ^a touch the helix at D. It would therefore cut off, from the straight line EA produced, a straight line equal to the circumference ABCD, by *propos. 18* of Archimedes *De heliciis*. And if that is granted, why should mathematicians torment themselves any further in searching out the quadrature [*tetragonismus*]? Would not the rectangle contained by half of that cut-off line and the radius ED be equal to the circle, by *propos. 1* of Archimedes *De circuli dimensione*?

[Margin a: 16. tertij.]

There is this too. Since the arcs GD and GI have different centres, if two radii were drawn from G to those centres (and they will be quite different from one another), and perpendiculars were erected to them at G (and these too would be different), ^b both would touch the helix at the point G — and so at one and the same point two different lines could be drawn touching the helix. Which is inept. Have we done enough to establish that you are a most delightful mathematician? Which was to be demonstrated.

[Margin b: 16. tertij.]

SCALIGER in *propos. 2*.

About a given finite straight line, to describe the dislocated volute of Dinostratus.

About the given straight line MN, with the semicircle MQN described and the rectangle MO set up on the same line, MQ and bO will be squares, since bM, bQ, bN are equal, by the definition of the circle. Let the quadrant of the circle MbQ be divided into four, and let the straight lines bg, bh, bI be joined from the centre. Let bM and QP likewise be divided into four, and lines erected cutting the straight lines bg, bh, bi at the points R, S, T. Let the same be done in the square bO; the volute is to be described through the points R, S, T, etc. Then, just as before in the ordered helix, let an isosceles triangle be set up on the base MR, one leg of which is equal to the radius bM; with the vertex of that triangle as centre and with the interval of the line bM, let the arc MR be described. And in the same way let the remaining arcs be continued with the same

Diagram. A woodcut set at the right-hand side of the foot of the page, beside Scaliger's second lemma. It shows a rectangle standing on a long horizontal base, ruled across its interior by a series of vertical lines and one horizontal line, with a quarter-circle arc and a second, flatter curve drawn inside it and radial lines running from the middle of the base out to the arc. A short vertical stroke descends from the middle of the base below the rectangle. Both capitals and minuscules occur on this block; the minuscules b, g, h, i are unambiguous against the capitals (the g carries a full descender, the b and h full ascenders).

- P (outside, at the upper-left corner of the rectangle): corner
- Q (outside, above the mid-point of the rectangle's top side): top point of the arc
- O (outside, at the upper-right corner of the rectangle): corner
- M (outside, at the lower-left corner of the rectangle): corner
- N (outside, at the lower-right corner of the rectangle): corner
- b (below the mid-point of the rectangle's bottom side): centre
- i (inside, upper left, close under the top side): point on the arc
- h (inside, below and left of i, on the arc): point on the arc
- g (inside, at the left, on the arc, set with a descender): point on the arc
- T (inside, left of centre, on the flatter curve): point on the inner curve
- S (inside, below and left of T): point on the inner curve
- R (inside, at the lower left): point on the inner curve
- V (inside, right of centre, above): point on the inner curve
- X (inside, right of V, lower): point on the inner curve
- Y (inside, right of X, lower): point on the inner curve
- Z (inside, at the lower right): point on the inner curve

- f (immediately below b, at the foot of the short vertical stroke descending from the base, set as a minuscule): the point the continuation of this lemma on the next page names as lying on the produced radius

interval upon the bases XY, YZ, ZN. Hence it will necessarily follow that the vertex of the isosceles triangle set up on the base TX lies on the produced radius at the point f — so that the circumference TVX is to be continued not from the mark T to the mark V and from V to X, but from T to X through the point V. Therefore V is the end of the volute of Dinostratus MRSTV, or of the volute NZYXV.

CLAVIVS.

The same fault is committed here as in the description of the helix. This dislocated volute, which has a uniform curvature, cannot be assembled out of circular arcs — as I said above, and it can be shown in the same way. For since all these arcs are described with the interval of one and the same radius bM but from different centres, they will necessarily cut one another at the points R, S, T, etc. And the more equal parts the quadrant MQ and the straight lines Mb, PQ are cut into, the more intersecting arcs will make up the volute; and so more volutes will be described inside the quadrant MQ. What could be more inept than that, or more absurd?

SCALIGER in *scholio proposit. 2.*

The way, then, is now secured for us to detect the end of the Dinostratean volute — a thing Sporus of Nicaea denied could be done.

And in the scholium to prop. 1 in the Appendix.

And indeed this is that most celebrated Dinostratean γραμμὴ [Greek: grammē, "line" — set with a γρ ligature], wrongly called by him, and by posterity, τετραγωνίζουσα [Greek: tetragōnizousa, "the squaring line" (the quadratrix) — set with the 8 (ov) contraction sort]. For Dinostratus persuaded everybody that, once its end — the point V, that is — had been detected, the two supreme things vainly sought by the ancients had been detected: namely the quadrant of the circle's circumference, and the power of the circle. The quadrant, because it is the third proportional to the segment BV and the radius bQ — which is truer than truth. The power of the circle, because it is equal to the rectangle conceived under the radius and the semicircumference of the circle. And that is utterly false; and so it is faultily called τετραγωνίζουσα. For it squares nothing; it only investigates the quadrant of the circumference. And so it would more truly be called quadrantaria than quadrataria. If, therefore, the opinion of Dinostratus and of the other

mathematicians were true, we should have no further labour before us; on the contrary, we could already boast, without any ill-will or suspicion of arrogance, that we had found the τετραγωνισμὸν [Greek: tetragōnismōn, "the squaring, quadrature"] so long harassed by everyone — we who have detected the true point V, the end of the volute itself.

CLAVIVS.

There is no reason for you to boast that you have secured the way to detecting the end of the volute, because the point V cannot be the end. For since no portion of the volute can be an arc of a circle, as has been said, it is impossible that the arc TV should indicate the extreme point. And so, although what Dinostratus and Archimedes demonstrate about the rectangle contained by the radius of the circle and the semicircumference is truer than truth (whatever you may chatter to the contrary), the circle is still not squared, since to this very day the extreme point of the volute has not been found. Your own discovery is thoroughly childish and unworthy of a mathematician. And let this stand as my reply to your abuse of Dinostratus and of the whole posterity of mathematicians — whatever your grammarians may finally decide about those newly coined words of yours, *quadrantaria* and *quadrataria*.

SCALIGER in *propos. 3.*

Of a radius divided by the limit of a dislocated volute, the smaller segment is an irrational line, which is called an Apotome.

Let the radius BG, in the semicircle AGE, be divided unequally at the point C by the end of the hamstrung volute, from the preceding scholium, and let CG be the smaller segment. I say that the segment CG itself is an irrational line, which is called an Apotome. When the rectangle EH has been completed, AG will be a square. Let the diagonal BH be drawn. With the radius GB produced toward the side of F, let BF be equal to two fifths taken from BG, by VI.9. From the line BA let BR be cut off, equal to the mean proportional between BF, BG, by VI.13. Now the lines BF, BG are commensurable in length, by the construction. Therefore the line BR is commensurable with them, seeing that it is ῥητὴ [Greek: rhētē, "expressible, rational"] in power, by X.20. But since, as the length BF is to the length BG, so the power of BF is to the power of BR, and the power of BR to the power of BG — that is, of BA — by the corollary of VI.20. And BF is to BG as 2 to 5, by the construction; that is, as a non-square number to a non-square number. Therefore the square of BF to the square of BR, and the square of BR to the square of BG — that is, of BA — have the ratio that a non-square number has to a non-square number. Therefore, by

the last part of X.9, the sides of those squares, BF, BR, BA, are incommensurable in length with one another, and commensurable only in power. Since, then, BA is a ῥητὴ length (for it is 5 of the parts set out, as has just been said), while BR has been shown to be incommensurable in length with that same BA and commensurable with it only in power, AR will be an Apotome, by X.74. From the marks C, R let the lines CQ, RY be drawn parallel to the lines AB, AH, meeting the lines HA, HG at the points Q, Y, and cutting one another at the point D. Therefore CD, BR; likewise BC, RD, will be equal, from the construction, with the help of I.33 and I.34. But the angle CBD, in the triangle DCB, is half a right angle, because of the diagonal BH in the square AHGB, by I.34. Likewise the angle C is a right angle, from the construction. Therefore the remaining angle CDB is half a right angle, by I.32; and by 6 of the same book the sides CD, CB are equal. But CD was already equal to BR. Therefore the two lines CB, BR are equal to the same CD. So they will be equal to one another, by the first postulate. And consequently the rectangle BD is a square about the diagonal BH in the square ABGH. Therefore DH also will be a square about the same diagonal, by VI.24. But BR cuts off from BA — that is, from BG — the Apotome AR. Therefore CG, being equal to it, will be an Apotome. Which was to be demonstrated.

Diagram. A woodcut set into the left half of the page, beside Scaliger's third lemma. It shows a wide rectangle standing on a long horizontal base, with a large arc springing from the lower-left corner, rising to the top side about half-way along, and descending to the lower-right corner. The interior is ruled by several vertical lines and two horizontal lines, and a diagonal is drawn from the upper-left corner down toward the base; two short diagonal strokes cross near the left. A short vertical stroke descends from the middle of the base below the rectangle. Small leader-dashes point to two of the interior letters. Every letter listed is read directly off the block; those the lemma does not name are given by position only.

- H (outside, at the upper-left corner of the rectangle): corner
- Y (on the top side, a little to the right of H): point on the top side
- G (on the top side, at the summit of the arc): top of the arc
- A (outside, at the lower-left corner): corner
- E (outside, at the lower-right corner): corner
- B (on the bottom side, at its middle): centre
- R (on the bottom side, left of centre): point on the bottom side
- O (on the bottom side, between R and B): point on the bottom side
- Q (outside, at the left, on the left-hand side of the rectangle): point on the left side

- I (inside, upper left, with a leader-dash): interior point
- D (inside, below I, at the left): interior point
- K (inside, below D, with a leader-dash): interior point
- L (inside, upper left, on the arc): point on the arc
- M (inside, at the middle left): interior point
- C (inside, at the centre, above N): interior point
- N (inside, at the centre, below C): interior point
- F (below B, outside the rectangle, at the foot of the short vertical stroke): point on the produced radius

CLAVIVS.

You will have done something great, Joseph Scaliger, if you can carry this off as a demonstration before a mathematician. For my part, I shall convict it of being remote from all truth before a judge not a little fairer to you than to the truth — namely yourself. (See how far I trust the fairness of my case!) I therefore pronounce this proposition false, and pronounce that in demonstrating it you reason fallaciously, you, the mathematician so much greater than Archimedes. I demonstrate both points briefly, as follows. The paralogism consists in this: you assume that the lines CQ and RY, if BR is taken as the mean proportional between BG and its two fifths BF,

as BF — intersect one another on the diagonal BH, namely at the point D. That you do not prove; nor can you prove it, as I shall show below. For if they do intersect at D, it follows very nicely that BR and BC are equal, and likewise the remaining lines RA and CG; and therefore, since RA is an apotome, as you rightly proved, CG will be an apotome too. But suppose they intersect above the diagonal BH, at I. Then BR will not be equal to BC. For BR and RD are equal, because the angles at B and D are half right angles; whereas BC is greater than RD, since BC — if CQ passes through I — is equal to RI, and therefore greater than RD, that is, than RB. From this it follows that the remainder CG is smaller than the apotome RA. And if CQ and RY intersect below the diagonal, at K, the contrary follows: CG is greater than the apotome RA. You see, then, that you prove nothing unless it is granted you that the lines CQ and RY intersect one another on the diagonal, at the point D.

A N O T H E R fault lies in this demonstration of yours. You assume BR to be the mean proportional between BG and BF, two fifths of BG, and yet you make no attempt to prove from that assumption that the lines CQ and RY intersect on the diagonal BH. Geometers count this a fault, for they always bring the parts of the

construction to bear in the demonstration. Why do you take BR as the mean proportional between BG and two fifths of it rather than between BG and three fifths of it, or one fifth? Or, for that matter, between BG and two sevenths of it, or three, or four, or one? On any of these your sophistical demonstration proceeds equally well. For by the last part of proposition 9 of the tenth book, the lines BA and BR are rational and commensurable in square only; and therefore, by proposition 74 of the tenth book, RA is an apotome, just as before. Do not conclude from this, however, that CQ and RY cut one another on the diagonal. That BA and BR are rational and commensurable in square only is taught by the last part of proposition 9 of the tenth book. For the ratio of BF to BG is as 3 to 5, or 1 to 5, or 2 to 7, or 3, or 4, or 1 to 7 — that is, as one non-square number to another non-square number, and so forth. Learn your geometry better, then, so that you may know what it is you have to demonstrate.

N O W that your proposition is false — that is, that BC, the line between the centre B and C, the end of the volute, is *not* the mean proportional between BG and BF, two fifths of it, as you would have it (since of course you suppose BC equal to BR), but is greater than the mean proportional — has been demonstrated by *Adrianus Romanus* [Adriaan van Roomen] and *Franciscus Vieta* [François Viète]. I shall set their demonstrations below, so that you may at last feel some shame at being so little versed in geometry and yet reckoning everyone else — indeed Archimedes himself (which is intolerable — as worth nothing beside yourself).

Van Roomen's demonstration runs roughly as follows. Let the whole sine BG, or BA, be set at 100000; BF will accordingly be 40000, that is, $\frac{2}{5}$ of BG or BA. From 40000 into 100000 there arises the number 4000000000, ^a which is equal to the square of the line BR, the mean proportional between BG and BF. Its square root, taken less than the true one — that is, BR — is 63245; taken greater than the true one, 63246.

[Margin: a — 17. sexti. (Euclid VI.17)]

Next, let us take the arc GL to be a twelfth part of the quadrant, that is, to contain $7\frac{1}{2}$ degrees, and the arc LA to be $82\frac{1}{2}$ degrees. Let BO likewise be conceived as a twelfth part of the radius BA. So, with the whole sine BA set at 100000, BO will be its twelfth, $\frac{100000}{12}$. Then, when the radius BL and the perpendicular OM have been drawn, the point M will lie on the volute, as I showed at the end of Book VI of Euclid. And when MN too has been drawn perpendicular to BG, ^b BN will be equal to OM.

[Margin: b — 34. pri. (Euclid I.34)]

Now since OM is greater than 63246, as I shall show, BN will likewise be greater than 63246 — that is, than BR — and so BC will be greater still by far. For when the whole sine BO is set at 100000, OM is the tangent of the angle ABL, as I said in my treatment of the sines: the tangent, I mean, of $82\frac{1}{2}$ degrees, namely 759575. If, then, we set it out thus — as BO, the whole sine 100000, is to 759575, the tangent OM, so BO, $\frac{100000}{12}$, is to a fourth term — OM will be found greater than 63297. Therefore BC will be far greater. Since, then, BR has been found greater than 63246, the line BC between the centre and the end of the volute will be greater than BR, the mean proportional between BG and BF, two fifths of it. And consequently CG will be smaller than the apotome RA. Nor will you ever demonstrate that CG is an apotome unless you first show that BC and BG are rational and commensurable in square only — which you will manage on the Greek Kalends.

F R A N C I S C V S Vieta, for his part, demonstrates as follows that the line BC is greater than the mean proportional between BG and two fifths of it. From what we demonstrated out of Pappus at the end of Book VI of Euclid, the radius BA, or BG, is the mean proportional between the quadrant AG and the line BC. And since, when the diameter is 7, the circumference is less than 22, as Archimedes demonstrated — and when the diameter is 14, the circumference is less than 44 — it follows that if the radius BA is set at 7, the semicircumference will be less than 22, and the quadrant AG less than 11. Therefore if the radius BA is set at 35, the quadrant AG will be less than 55. Now the rectangle contained by BC and the quadrant ^c is equal to the square on BA, that is, to the number 1225. Dividing this by the quadrant AG, which is less than 55, we shall find BC greater than $22\frac{3}{11}$. For if the quadrant were exactly 55, BC would be $22\frac{3}{11}$. And it is plain that if the number 1225 is divided by a number smaller than 55 — namely by the quadrant AG — the quotient comes out greater than $22\frac{3}{11}$. Again, of the parts of which BA, or BG, is 35, BF is 14. So, since 14 into 35 makes the number 490, whose square root is less than $22\frac{3}{22}$, the mean proportional between BG and BF will be less than $22\frac{3}{22}$. Therefore, since BC has been shown to be greater than $22\frac{3}{11}$, BC will be greater than that mean proportional. And so, if from BA and CQ two lines are cut off equal to the mean proportional between BG and BF, their end points will fall short of RD — since BR and CD are equal to BC, on account of the square CR — and not fall short of it by less.

[Margin: c — 17. sexti. (Euclid VI.17)]

S C A L I G E R *in propos. 5.*

THE PERIMETER of a dodecagon to be inscribed in a circle is greater in power than the circumference of the circle. And the more sides the polygon to be inscribed in the circle has, the more will the perimeter of the polygon exceed in power the circumference of the circle.

Let there be a circle ABG about the centre F, whose diameter is AG. Let AB be the side of a hexagon, AD the side of a dodecagon, and AC the side of a 24-sided figure. Let the lines FB, FD and FC be drawn; then AB and AD will be bisected at H and E by our proposition 4, ^a and therefore also cut at right angles. Now since, when the diameter AG is put at 16, if we set out "as 7 is to 22, so is 16 to another term," the circumference will be found to be a little less than $50 \frac{2}{7}$ — let us then take it not to exceed 51. And since the side FA is in power sesquitertian [4 : 3] to the perpendicular FH, of the parts of which the square of the radius FA — that is, the side of the equilateral triangle FAB — is 64, the square of the perpendicular FA [?: FH expected] will be 48, and its side will be about $6 \frac{12}{13}$. If this be subtracted from the length

[Margin: a — 3. tertij. (Euclid III.3)]

Diagram. A large circular arc drawn about the centre F. A straight vertical line runs down the left of the figure from A at the top, through F, to G at the bottom, so that AG is the diameter. From A the arc sweeps to the right and downward through C, D and B, and then curves back down to G. Three straight lines are drawn from the centre F out to the arc, meeting it at C, D and B; three chords are drawn from A to the same three points. E is marked on the chord from A that meets D; H is marked lower down, on the chord AB. Labels read directly off the block:

- A (top left, upper end of the vertical diameter): A
- C (on the arc, first point right of A): C
- D (on the arc, below and right of C): D
- E (on the chord from A, between C and D): E
- H (on the chord AB, below E): H
- B (on the arc, at the right, where the chords and the radius meet it): B
- F (left, centre of the circle, where the three radii spring): F
- G (bottom left, lower end of the vertical diameter): G

No further lettering is visible on the block. The points named in the accompanying text but not lettered on the woodcut are none — every point cited (A, B, C, D, E, F, G, H) appears.

of FD, there will remain the length of the line HD, about $1 \frac{1}{13}$.^a Since, then, the square on DA is equal to the squares on DH and HA, and DA is the side of the dodecagon, the perimeter of the dodecagon will be greater in power than twelve times HA — that is, than three times the diameter AG — by twelve times the square of $1 \frac{1}{13}$, that is, by about 13 whole units of power, whose side is far greater than 3. And this, compounded with three times the length of the diameter, will be greater than 51. The perimeter of the dodecagon is therefore greater than 51, and for that reason far greater than the circumference ACDBG.

[Margin: a — 47. pri. (Euclid I.47)]

CLAVIUS.

W H A T am I to wonder at first here — that in a matter so perfectly plain you should be blind so busily and so persistently, or that, blundering so foully, you should still lay claim to the name of mathematician with such assurance? That the perimeter of a dodecagon inscribed in a circle is greater than the circumference of the circle is what that most expert craftsman Joseph Scaliger asserts. Asserts, did I say? He goes further, and with no hesitation at all professes that he has demonstrated it. But granting that reason has failed you, are we to believe that you have been robbed of the light of your eyes as well? For I shall not argue with you by mathematical reasoning but by plain facts that the eye can take in, so that you may have no way of slipping off. Where did you ever see an arc smaller than its own chord? Come now: take twelve arcs, and subtend each arc with its own chord. Will you not admit that the circumference of the circle, made up of the twelve arcs, is greater than the perimeter of the dodecagon, which twelve straight lines make up? And if in the end you dare to deny it, who is to forgive you? But see how much thought I give to your reputation. For my part I shall never bring myself to believe that this was really what you thought. Rather, not being thoroughly schooled in the geometrical arts, you were so hemmed in on every side by numbers, so entangled and enmeshed in them, that — provided you might at last tear yourself free of that maze — you would break out at whatever opening presented itself. I have heard from one of your intimates that, when a great many people from France and Germany had in friendly fashion urged you to change this opinion, wholly unworthy of a geometer, and when you had at last recognized the way by which they hoped to lead you out of the fog, your reply was this: that the proposition belonged to a man whose body was then gravely ill, and whose mind too had been infected by the body's contagion. I should indeed have congratulated Scaliger here on singing the recantation of this proposition — had he not, like the filthiest of dogs, swallowed down again, and more foully than

before, what he had once in disgust thrown up. For not long afterwards, as though he repented of that recantation, this most acute man, in no way the most ignorant in the geometrical arts, went back over his own work, inspected it again and again, and applied himself wholly and diligently to examining it. Then at last, as a wholly upright judge, he boldly repeated those same condemned errors and paralogisms of his which he had been unable to see scattered through his own proposition. He openly professed that he had demonstrated by numbers that the perimeter of the dodecagon is greater than the circumference of the circle, and sternly announced that with that demonstration he meant to transfix the eyes of every mathematician there is anywhere. And since there is no one who does not see that this is false, he was astonished that a demonstration by numbers had brought him to maintain such a falsehood, and did not hesitate to declare that demonstrations by numbers even in Archimedes — such as the one on the ratio of the circumference to the diameter — are wholly deceptive. But I shall now make plain how much he wraps up in his demonstration, and how false it is, through ignorance of numbers. Let this be our business now: since Scaliger has not seen the paralogisms of this demonstration of the fifth proposition, let us expose them — not for his sake, which would be labour wasted, but so that they may become plain even to less practised readers.

A N D here at the outset I pass over — though it richly deserves a schoolboy's whipping — that he does not even know the terms the more skilled use. What sort of expression is this? *If the diameter is 16 of the parts set out, one seventh will be less than $\frac{3}{16}$. Accordingly three times the length of the diameter together with $\frac{3}{16}$ — that is, $\frac{51}{16}$ of the length of the diameter — will be greater than the perimeter of the circle.* Had he consulted the geometers, he would surely have put it thus: one seventh of a diameter of 16 parts is less than 3, since $\frac{1}{7}$ comes to no more than $2\frac{2}{7}$; and therefore three times the length of the diameter, that is 48, together with 3, namely 51, will be greater than the perimeter of the circle. It was for this reason that in setting out his demonstration we wrote that the circumference does not exceed 51 if the diameter is 16, and not that it does not exceed $\frac{51}{16}$ of the length of the diameter, as he has it; for if one expresses the circumference by the number $\frac{51}{16}$, it would come out smaller than the diameter 16 — which is the height of absurdity. But let us come now to the demonstration itself, in which two conspicuous blunders stand out above the rest, blunders by which you may recognize Scaliger.

A F T E R he has demonstrated, then, that the line HD is $1\frac{1}{13}$ — or rather a little less, since FD is 8 and the number $6\frac{12}{13}$ is a little less than FH — and likewise that the square on AD is equal to the squares on AH and HD, he infers that the

perimeter of the dodecagon, which is twelve times the side AD, is greater in power than twelve times HA (that is, than three times the diameter AG) by twelve times the square of $1\frac{1}{13}$; and accordingly, since the square of the number $1\frac{1}{13}$ is $196/169$ and twelve times that is $2352/169$, that the square of the dodecagon's perimeter exceeds the square of three times the diameter AG by the number $2352/169$ — that is, by $13\frac{155}{169}$ — whose root is far greater than 3, since it is very nearly $3\frac{921}{1261}$ [?]. For the approximate root of the numerator 2352 is $48\frac{48}{97}$, or $4704/97$, just as the root of the denominator 169 is 13; and these two roots make up a fraction whose numerator is $4704/97$ and whose denominator is 13, as may be seen in this display. Dividing the numerator by the denominator yields the approximate root $3\frac{921}{1261}$ [?].

[Printed display, set within a ruled frame:]

$$\begin{array}{r} 4704 \\ \hline 97 \\ \hline 13 \end{array}$$

And here he has made his first disgraceful slip. For if the square of the dodecagon's perimeter were twelve times the square on AD, and the square on the line that is three times the diameter (or twelve times the line AH) were twelve times the square on AH, then the square of the dodecagon's perimeter would exceed the square on the line that is three times the diameter by twelve times the square on HD, that is, by the number $13\frac{155}{169}$ — just as, since the square 9 exceeds the square 4 by the number 5, so the number 108, which is twelve times the square 9, will exceed the number 48, which is twelve times the square 4, by the number 60, which is twelve times the excess 5. This indeed follows from proposition 7 of the *Sines*, and this excess 60 is produced by multiplying the excess 5 by 12. But the case is not so. For since the perimeter of the dodecagon is twelve times the side AD, just as three times the diameter is twelve times the line AH, ^b the square of the dodecagon's perimeter will have to the square on the side AD the ratio of 144 to 1 — that is, the ratio duplicate of the sides. And by the same reasoning the square on three times the diameter will have to the square on the side AH the ratio of 144 to 1. Therefore the square of the dodecagon's perimeter will exceed the square on three times the diameter by one hundred and forty-four times the square on HD, which was $196/169$, or $1\frac{27}{169}$; so that the excess of these squares is about 167, which arises from multiplying the square on HD, that is $1\frac{27}{169}$, by 144, as follows from the same proposition 7 of the *Sines*. And the square root of this excess 167 is nearly 13, since it comes very close to $12\frac{23}{25}$.

The excess between the square of the dodecagon's perimeter and the square on three times the diameter is therefore not about 13 — or, more exactly, $13\frac{155}{169}$, whose root is $3\frac{921}{1261}$ [?], and so greater than 3 — as Scaliger will have it.

[Margin: b — 20. sexti. (Euclid VI.20)]

B U T even if it be granted to Scaliger that this root is greater than 3, what he goes on to infer from it is still not sound. Therefore this root

is 3, and something more; added to three times the diameter, that is, to 48, it makes the root of the square of the dodecagon's perimeter — *hæc est*, makes the perimeter of the dodecagon greater than 51, and therefore greater than the circumference of the circle. For it is not the case that, if one square exceeds another, the side will exceed the side by the root of the excess; it exceeds it by a smaller number. The square 100 exceeds the square 64 by the square 36, and yet the side 10 does not exceed the side 8 by the root of the excess, which is 6, but by the number 2, which is less than 6. Again, the square 4225, whose side is 65, exceeds the square 3969, whose side is 63, by the square 256, whose side is 16; and yet the side 65 exceeds the side 63 only by the number 2, and not by 256 [as printed] with the side 16. The reason why the greater side always exceeds the lesser by a number smaller than the root of the number by which the greater square exceeds the lesser is this. Since, by proposition 7 of Book 6 of Jordanus [Jordanus de Nemore], the difference of the sides multiplied into their sum produces the difference of the squares, the root of that difference will be the mean proportional between the difference of the sides and their sum; and therefore the difference of the sides will be smaller than the root of the difference of the squares. So even if the square of the dodecagon's perimeter did exceed the square on three times the diameter by the number $13\frac{155}{169}$, it would not follow that the perimeter of the dodecagon exceeds three times the diameter by the root of the square number $13\frac{155}{169}$, which is greater than 3; it would exceed it by a smaller number, one which, added to 48, will make a number less than 51.

I have shown, I think, where Scaliger's "demonstration" — as he himself calls it, though the wise judge it a piece of schoolboy reasoning — goes wrong. For in the first place he supposes that the square of the dodecagon's perimeter exceeds the square on three times the diameter by twelve times the square of the number HD, $1\frac{1}{13}$, whereas it exceeds it by one hundred and forty-four times that square. This is so gross that I should have thought it could have been noticed not merely by the less skilled but even by Scaliger himself — if, like a bat, being a creature of the night, he could have borne the light of day. Then again he errs in thinking that the root of the square of the dodecagon's perimeter exceeds the root of the

square described on three times the diameter by the root of the excess of the squares. And even if in this he thinks himself entitled to the fullest confidence, he ought at least to have put some confidence in Jordanus, who plainly demonstrates the opposite in Book 6, proposition 7, as I have reported.

S O you would have commended yourself to us better, my dear Scaliger, if you had preferred to draw the conclusion I am about to state. Since HD is about $1\frac{1}{13}$, as has been shown, its square will be $1\frac{27}{169}$; and this, added to 16, the square on AH, makes $17\frac{27}{169}$, the square on AD, that is, $\frac{2900}{169}$, whose root AD is about $4\frac{198}{1391}$. For the approximate root of the numerator 2900 is $53\frac{91}{107}$, and the root of the denominator 169 is 13. These two roots make up a fraction whose numerator is $53\frac{91}{107}$, or $\frac{5762}{107}$, and whose denominator is 13, as appears in this display. And when the numerator $\frac{5762}{107}$ is divided by the denominator 13, the quotient comes out $4\frac{198}{1391}$ as the approximate root AD; and this, taken twelve times, will give the perimeter of the dodecagon as $49\frac{985}{1391}$, which is less than the circumference of the circle, since by Archimedes the latter is $50\frac{2}{7}$ — that is, three times the diameter 16 together with $\frac{2}{7}$ [?]. And yet this perimeter of the dodecagon is greater than the true one, because the square on DH, $1\frac{27}{169}$, is greater than the true value, seeing that the line DH is a little less than $1\frac{1}{13}$, as was said above. By Archimedes' lower limit the circumference of the circle is less than the true value at $50\frac{18}{71}$, and the perimeter of the dodecagon is smaller still than that, even though it is greater than the true value.

[Printed display, set within a ruled frame:]

$$\begin{array}{r} 5762 \text{ [?]} \\ \hline 107 \\ \hline 13 \end{array}$$

SCALIGER in *eadem* propos. 5.

A G A I N, the square of the side $1\frac{1}{13}$, the line HD, is $\frac{196}{169}$; and this, put together with the square on HA, will make the square on DA, $17\frac{47}{169}$, by I.47, since the angle DHA is right, as has already been shown. The square on EA, therefore, is $\frac{730}{169}$ (namely the fourth part of the square on DA, which is double EA). But the square on the line CA is greater in power than the square on EA by the square on EC, by the same I.47; for the triangle CEA is right-angled. But the square on EA is $\frac{730}{169}$, whose side is a little greater than $2\frac{7}{13}$. Hence twenty-four times more than $2\frac{7}{13}$. They will be more than — or at any rate not less than — $\frac{61}{16}$:

the perimeter, that is, of the [Greek: τὸ τεσσαρεσκαίκοσι(?)γώνον (τοῦ τεσσαρεσκαίκοσι...γώνου, "of the four-and-twenty-angled figure," i.e. the 24-gon; set with the 8 (ου) contraction sort. One medial cluster, which reads as δεκα, does not fit the sense and is left flagged)], is in any case greater than the perimeter of the circumscribing circle, which had been set at only 51/16. And the more sides the polygon has, the far greater will the perimeter of the inscribed polygon be found by numbers than the perimeter of the circumscribing circle. Which was to be demonstrated.

CLAVIUS.

BUT hey there, hey! What is this, and where does so great a monstrosity come from, my good man? Until now I supposed I was dealing with nothing worse than a non-geometer [Ageometra]; now you show yourself utterly untaught in arithmetic as well. For where, with all your splendid learning, did you learn that the square on HD, 196/169, together with the square on AH, 16, makes the square on DA 17 47/169? Anyone who has so much as touched arithmetic notices at once that it makes 17 27/169. Next, neither do I see why the side EA of the square 730/169 — the fourth part of your false square 17 47/169 on the line AD — should be set down as a little greater than 2 7/13. For I find it only a little greater than 2 55/702. The nearest root of the numerator 730, taken greater, is 27 1/54; and the root of the denominator 169 is 13; and these two roots make up a fraction whose numerator is 1459/54 and whose denominator is 13, as you see in the display set out. And when the numerator is divided by the denominator, the quotient comes out 2 55/702 — a little more, that is, than the side EA. Since, then, you have set the square on HA [?] greater than it should be, and accordingly have made its fourth part 730/169 and the side of that 2 7/13, which is likewise greater than it should be, what wonder is it that from these false assumptions you have found the perimeter of the 24-sided figure to be about 61, greater than the circumference of the circle, 51? And here too you blunder splendidly, in taking EA for the side of the 24-sided figure, when CA is that figure's side.

[Printed display, set within a ruled frame:]

$$\begin{array}{r} 1459 \\ \hline 54 \\ \hline 13 \end{array}$$

IF the reckoning is done correctly, the perimeter of the figure will be found smaller than the circumference of the circle, though still greater, as it ought to be,

than the perimeter of the dodecagon. For since the square on HD, $196/169$, together with the square on AH, 16 , makes $17\frac{27}{169}$, the square on DA, whose fourth part is $725/169$ — that is, the square on the line EA — and since this, taken away from 64 , the square on AF, leaves as remainder the square on FE, $10091/169$, whose nearest root taken less than the true one is $7\frac{1900}{2613}$. For the nearest root of the numerator, taken less, is $20191/201$; and this, with the nearest lesser root of the denominator, that is, with 13 , makes up a fraction whose numerator is $20191/201$ and whose denominator is 13 ; and dividing the numerator by the denominator gives the quotient $7\frac{1900}{2613}$. If, then, FE, $7\frac{1900}{2613}$, is subtracted from FC, 8 , the remainder will be EC, $713/2613$, which is greater than the true value; and its square, $508369/6827769$, likewise greater than the true value, added to $725/169$, the square on the line EA, will make the square on the line AC, [numeral: ?], greater than the true value, whose approximate root is [numeral: ?] — since the root of the numerator, taken next less, [numeral: ?], with 33969 , the root of the denominator, makes

makes this fraction; and when the numerator is divided by the denominator, the quotient is $10072062450/48212201971$ [?].) Multiplied by 24 , this gives the perimeter of the 24-sided figure, $241720408800/4821220170$ [?] — that is, $50\frac{668400300}{48212201700}$ [?] — which is less than the circumference of the circle. Where now, I ask you, is that perimeter of the polygon greater than the circumference of the circle? Speak up: let us hear from your own mouth, with willing ears, a thing never before heard by me or by anyone else. Or better still, consult someone who has studied arithmetic, who can help you find the perimeter of the polygon and teach you arithmetic more plainly.

[Margin: the fraction just referred to, set in a ruled frame in the outer margin:]

10072062450

141930

33969

SCALIGER in *scholio eiusdem propos. 5.*

Since, then, as has now been shown, the more sides the inscribed polygon has, the greater its perimeter is found by the numbers to be than the circumference of the circumscribing circle, Archimedes tried in vain to investigate the circumference of a circle by numbers in a polygon of very many sides circumscribing the circle. For the circumscribing polygon is beyond doubt far larger than the similar inscribed polygon — and that inscribed polygon has been shown by the numbers

to have a greater perimeter than the circumscribing circle. The circumscribing polygon, therefore, will have a greater perimeter still, and so his error is the wider.

This is a notable paradox in geometry, and one that Archimedes himself, as we have already remarked, did not notice. In any other way there is no doubt that an arc is greater than the chord that subtends it; but by the numbers it will be found otherwise.

CLAVIVS.

Would anyone mutter that you are not "Most Illustrious"? or suspect that you do not draw your descent from an ancient and noble family? On the contrary: this paralogism of yours is so distinguished in its nobility that it could have conferred its own nobility on you. But listen, whoever you are, for whose sake Scaliger has at last, after so long an expectation, composed this book of his; listen to the verdict of a man of the utmost expertise in geometry and arithmetic, and from it recognize the lion by his claw, as the saying goes. What he teaches is no trifle, nothing commonplace. For he thinks he has demonstrated a remarkable paradox: that a polygon of 12 sides, or of more, has a perimeter greater than the circumference of the circle circumscribing it. Do you still not see, Scaliger, how many lies you fabricate inside a single lie? How many faults are to be caught in this thoroughly inept demonstration of yours (to call it by your own name for it) was shown just above. This point, however, is the decisive one, and it convicts you not of ignorance only, but of rashness and impudence as well. For who could bear with an even temper to see you do Archimedes so gross an injustice? Archimedes investigates the perimeter of the circle by numbers ἐπιστημονικῶς [Greek: epistēmōnikōs, "scientifically," i.e. by strict demonstration], and proves that the circumference of a circle has to its diameter a ratio less than triple-and-ten-seventieths [tripla superdecupartiente septuagesimas, i.e. $3 \frac{10}{70}$], but greater than triple-and-ten-seventy-firsts [tripla superdecupartiente septuagesimas primas, i.e. $3 \frac{10}{71}$]. And you will never, however much you contrive everything that your passion for contradicting suggests to you, be able to break his demonstration or shake it.

SCALIGER *in propos. 6.*

The square on the circumference of a circle is ten times the square on the diameter.

Let the circle NO cut off from the infinite line Q T the straight line AB, beginning to move along that line from the point on it at which it touches, until it comes

round to the same point again, by the first postulate of this work. The straight line AB, then, is equal to the perimeter of the given circle NO. On the straight line AB let the semicircle AEFB be described, and let there be fitted into it a length EB triple the length NO, by the first proposition of the fourth book; and let the straight line EA be joined. Next from the point E let the straight line EC be dropped perpendicular to AB, by 12. of the first book. Again from the same straight line AB let the tenth part DB be cut off, by 9. of the sixth book. Lastly from the point D let DF be erected perpendicular to AB, by 11. of the first book, and let the straight lines FA, FB be drawn. By the corollary to 8. of the sixth book, the straight line BF is a mean proportional between AB and BD. Therefore by the corollary to 20. of the sixth book, as the length AB is to the length BD, so is the square on AB to the square on BF; but the length AB is ten times the length BD, by construction. Therefore the square on AB is ten times the square on BF. Hence by 47. of the first book the square on AF is nine times the square on BF — that is, the length AF is triple the length FB, by 9. of the tenth book. This being demonstrated, let AR and BP be erected perpendicular to AB; they will therefore be parallel to the straight lines CE and DF. And so the angle RAE will be equal to the angle AEC, and the angle PBF to the angle BFD, since they are alternate angles. Likewise the angles EHA, FHB are equal by 15. of the first book; and in the triangles EAH, FBH the angles AEH, BFH are equal, being right angles, by 31. of the third book. Therefore the remaining angle EAH is equal to the remaining angle FBH; and when these are taken away from the equal angles RAB, PBA, there remain RAE — that is, AEC — and FAB; likewise PBF — that is, BFD — and EBA, equal. But the angles AEC, ABE are equal, and likewise BFD, FAB, because the triangles AEC, AEB, and likewise BFD, BFA, are equiangular, by 8. of the sixth book. Hence FAB, EBA are equal, just as the angles AEB, BFA are also equal in the triangles ABE, BAF. Therefore the remaining angle EAB is equal to the remaining angle FAB, and the one triangle is equiangular with the other. Since, then, both triangles ABE, BAF have the side AB in common, opposite equal angles AEB, BFA, and the same side adjacent to the equal angles EAB, FBA, therefore by 26. of the first book the remaining sides AF, FB are equal to the remaining sides BE, EA. But the length AF is triple the length FB, by construction. Consequently BE will be triple the length EA. But that same BE is triple the length NO, by construction. Therefore by 9. of the fifth book AE and NO are equal. And so the square on AB — that is, the square on the circumference of the circle NO — is ten times the square on the diameter NO, which was to be demonstrated.

Diagram. At the left of the block stands a small circle with a vertical diameter drawn through it, its centre marked by a dot; the top of that diameter is lettered N and the foot O. To the right of the circle runs a long horizontal straight line,

lettered T at its far left end and Q at its far right end, with B and D marked on it toward the left and C and A toward the right. From B a vertical line rises to P; from A a vertical line rises to R. Between B and A a large arc is drawn over the base line. The point F sits low on the arc, immediately above and slightly right of B, and is joined by short lines down to B and down to D, and by a long line running right to A. The point E sits high on the arc toward the right, and is joined by a line down to C, by a line to A, and by a long line running left and down to B; the lines from F to A and from E to B cross each other beneath the arc.

- N (top of the small circle at the far left): N
- O (foot of the small circle): O
- T (far left end of the horizontal base line): T
- P (top of the vertical erected at B): P
- F (on the arc, just above and right of B): F
- B (on the base line, foot of the vertical to P): B
- D (on the base line, immediately right of B): D
- R (top of the vertical erected at A): R
- E (on the arc, upper right): E
- C (on the base line, left of A): C
- A (on the base line, foot of the vertical to R): A
- Q (far right end of the horizontal base line; an italic swash capital): Q

The point H, which Scaliger's proof repeatedly names (angles EHA, FHB; triangles EAH, FBH), is **not lettered on the woodcut** — the block shows the crossing of AF and BE but leaves it unlettered.

CLAVIVS.

Since this proposition — which is wholly the Arabs' — is stuffed full of fallacies on every side (for the ratio of the square described on the circumference to the square on the diameter is less than tenfold, as is clear from what Archimedes demonstrated in his little book *On the Measurement of the Circle*: for if the diameter is set at 7, the circumference is a little less than 22, and the square of the diameter will be 49 and that of the circumference a little less than 484, which has to 49 a ratio less than tenfold, since it is 490 that stands to 49 in a tenfold ratio) — since, I say, it has nothing of truth in it, I shall take pains to point out only those things which have cast darkness over our geometer Scaliger...

cast darkness over him. Now that he has demonstrated that the angles EAH, FBH are equal, the inference is correct: that if these angles are taken away from the

right angles RAB, PBA, the two remaining angles RAE, FAB — that is, AEC, FAB — taken together are equal to the two other remaining angles PBF, EBA — that is, to BFD, FAB taken together. Likewise that AEC is equal to the angle EBA, and BFD to FAB, by 8. of the sixth book. But it will never be gathered from this that FAB, EBA are equal, or AEC, BFD. And so Scaliger's demonstration collapses of its own weight; nor, strain as he may, will it ever prove that the straight lines AF, FB are equal to the straight lines BE, EA, and therefore that the straight line AE is equal to the diameter NO, or that BE is triple EA.

Since this labour could seem to Scaliger to have turned out well enough and just as he wished, he was carried away by his happy success and wanted to be borne higher still. So the very same proposition 6. — already secure enough, in his own judgment, on the strength of the first demonstration — he now tries to establish by yet another demonstration, one that might outdo the first (if we are pleased to grant Scaliger any credit). For Scaliger brings this second one alone to bear in proposition 3. of the Appendix to his *Cyclometrica*, as though it could take up the fight on behalf of all the rest and win the day single-handed. But he achieves nothing, because this second demonstration assumes the very thing he thinks he demonstrated in proposition 3.: that the greater segment of the semidiameter [*semidiametri*, so printed] which the displaced volute [*voluta luxata*] cuts off is a mean proportional between the semidiameter itself and two fifths of it. Since that is faulty, as was shown above, this later demonstration too cannot fail to be utterly false.

SCALIGER in *coroll. propos. 6.*

From these things it is established that the ratio which the length of the circumference of a circle has to the length of the diameter is greater than triple-and-a-seventh.

For if, say [V.G.], the length of the diameter is 7 parts, then in those parts in which the square of the diameter is 49 [recte: 49], the square of the perimeter will be 490 — which is indeed greater than 484, and 484 is only in the triple-and-a-seventh ratio.

CLAVIS.

But who would deny it — anyone, that is, to whom you have made good only that brilliant paralogism of yours, by which you tried to show that the square on the perimeter is ten times the square on the diameter, or anyone who has never seen the demonstrations of Archimedes and the rest? Archimedes certainly gives us grounds for believing that any such thing has been demonstrated by more expert

men, or ever could be demonstrated, only on the strength of your paralogism — since he demonstrates the exact opposite and contrary, however perversely you struggle against it.

SCALIGER in coroll. 2. propos. 6.

If a straight line cutting a certain angle of a triangle cuts the base as well, and the squares on the sides containing the cut angle stand to one another just as the segments of the base do, then that cutting line is perpendicular to the base, and the cut angle is right.

In the previous figure, in the triangle AFB (let the triangle AFB be considered bare, without the other things that are in the figure), let the straight line FD, cutting the angle F, cut the base AB also, in D, and let the squares on the sides FB, FA containing the angle F be to one another as the segments DA, DB of the base AB. I say that the straight line DF is indeed perpendicular to the base AB, and that the angle F is right. Erect the straight lines AR, BP at right angles to the base AB, and let us imagine drawn from the point F, the vertex of the angle AFB, to imaginary points q, m taken on the straight lines AR, BP, two straight lines Eq, Fm, both parallel and equal to DA, DB, and so on.

CLAVIS.

I could well wish that I were sometimes allowed either to censure nothing at all, or at least not everything, and not to mark it all with the censor's nail, as they say. But what am I to do, a man as devoted to truth as I am incapable of putting up with falsehood? This whole proposition of yours, the whole of it, is falsehood; the whole of it, demonstration and all, is error and darkness. And although it contributes nothing to cyclometry, I shall examine it all the same, so that every age may admire, as far as it can, Scaliger's plainly divine acuteness in geometrical demonstration. I shall set out its falsity once I have first pointed out the paralogisms sown through the demonstration. When, therefore, he directs us to draw from the point F, to the perpendiculars AR, BP, two straight lines both parallel and equal to DA, DB, he is openly begging the question. For how can this be done unless FD is perpendicular to AB — which is the very thing set out to be proved? For unless FD is granted to be perpendicular to AB, FD and BP will not be parallel; and consequently the perpendiculars drawn from F to BP, and DB, cannot be equal,^a however parallel they may be. For only parallels between parallels^b are equal, on account of the parallelogram formed out of those parallels. You feel, I suppose, Scaliger, what a ruin your ruinous demonstration drags down with it — or else I give up thinking well of you. But let us now turn

our eyes and our mind to the falsity of the proposition itself. I say, then, that it is possible for a straight line cutting a certain angle of a triangle to cut the base as well, and for the squares on the sides containing the cut angle to stand to one another just as the segments of the base do, and yet for the cutting line not to be perpendicular to the base, and for the cut angle not to be right.

[Margin: ^a 28. pri.]

[Margin: ^b 34. pri.]

For let there be a triangle ABC having the angle A right, and from A let the perpendicular AD be dropped to the base BC. Then, by Scaliger's preceding corollary 2., the square on AB will be to the square on AC as BD is to DC. With the arc CF described from A at the distance of the greater side AC, let the straight line BE be drawn making the angle ABE obtuse and cutting the arc in E. Let the straight line AE be joined; let DF be drawn parallel to the joined straight line CE; and lastly let the straight line AF be dropped from A to F. Since, then, AE is equal to AC,^c the square on AB will be to the square on AE as it is to the square on AC — that is, as BD to DC, by hypothesis, that is, as BE to FE. In the triangle ABE, therefore, the straight line AF has been dropped from the angle A, cutting the base in F, and the square on AB is to the square on AE as the segment BF to the segment FE, as we have shown; and yet AF is not perpendicular [*perpendicularis*, so printed] to BE, since the angle AFB is less than the obtuse angle ABE; nor is the angle BAE right, being part of the right angle BAC. You now have in full view, candid reader, the outstanding and singular acuteness of so great a man as Scaliger boasts himself to be, and in matters geometrical you may admire either the height of his skill or his rashness. For with what a voice, with what spirit, did he insist that he was proving the straight line AF perpendicular to BE, and the angle BAE right?

[Margin: ^c 7. quin.]

Diagram. A triangle standing on a long, nearly horizontal base, with its apex A at the top. B lies at the left end of the base and C at the right end; from A the sides run down to B and down to C. On the base, at D, the short line AD falls from the apex. Below and left of D lies F, joined to A by a line from the apex and to D by a short line, so that a narrow spike A–F sits inside the triangle. From B a long line runs down and to the right to E, which lies low on the right; A is joined to E, and C is joined to E. A wide arc, convex downward, sweeps from below F across to the right, passing through E and running on toward C.

- A (apex, top centre): A

- B (left end of the base): B
- D (on the base, right of B, foot of the line from A): D
- F (below the base line, inside the figure, under and left of D): F
- E (low on the right, on the arc): E
- C (right end of the base): C

No other letters are cut on the block; in particular the letters q and m named in Scaliger's own corollary belong to his earlier figure, not to this one.

SCALIGER *in scholio propos. 6.*

But Archimedes tries to demonstrate, by a reduction to the impossible, that the length of the perimeter is a little greater above the diameter than triple-and-a-seventh — that is, that the square of the perimeter is less than 484, when of course the square of the diameter is 49.

That error the demonstration above sufficiently refutes. But why he persuaded himself of it, and posterity too, has been set out in the Prolegomena. A similar absurdity occurs in 18. & 19. of Archimedes' *περὶ ἑλικῶν* [Greek: the first word is set with the standard *περ-* abbreviation ligature sort rather than spelled out; *peri helikōn*, "On Spirals"].

CLAVIVS.

I could never have supposed that your enmity toward Archimedes ran so deep that one or two charges against him — false though they were — could not satisfy you. The suspicion now steals over me that, exactly as he has taken up the contest for truth against you, so you have taken up the contest for falsehood against Archimedes; and that this is how all the hatred that ordinarily holds between truth and lying has migrated wholesale into the pair of you. For what do you fling at him except your own errors and paralogisms? And what does he set against you except the truth? For with as much truth as he demonstrated, in his book *On the Measurement of the Circle*, that the ratio of the circumference to the diameter is less than triple-and-a-seventh, and so on — with just so much falsehood do you shamefully oppose him.

In the five propositions that follow — namely 7. 8. 9. 10. & 11. — Scaliger tries to find a straight line equal to the circumference of a given circle, and conversely to find a circumference equal to a given straight line; likewise to take a prescribed part away from a given circumference; and finally to take a prescribed part away from a given angle. But since in every one of these he either assumes that the square on the circumference is ten times the square on the diameter — which we

refuted above — or else describes the spiral by means of circular arcs, which is likewise inept and absurd, the constructions of those propositions will be false through and through; so that it is not worth spending time on refuting them.

S C A L I G E R in propos. 12.

If, from two diameters cutting one another at right angles in a circle, the sides of the hexagon and of the pentagon to be inscribed in the same circle are thrown out from the end of the one to the other produced, then the remaining part of the diameter so thrown out — the part lying between the produced side of the hexagon and the side of the square to be inscribed in the same circle — is bisected by the side of the pentagon.

In the circle ABCD let the diameter BD, which cuts the diameter AC at right angles, be produced without limit toward the side of G; and let the straight line AG, equal to the diameter AC, meet it so produced. Next let the straight line BG be bisected in F. And it is evident that CG is equal to GA, and that the whole triangle AGC is equilateral, and that the squares on AG and on EG are as 4 and 3, as we have now said so many times, and are therefore commensurable with one another in square only. But EB, being half of AG, is commensurable in length with AG, and therefore commensurable with EG in square only. BG, then, will be an ἀποτομή [Greek: apotomē, "apotome" — an irrational straight line of Euclid X], an ἄλογος line [Greek: alogos, "irrational"; printed with the terminal -ος contraction sort]. I say that if a straight line is dropped onto that ἀποτομήν BG from the end A to the point of bisection F, the line so dropped is the side of the pentagon to be inscribed in the circle ABCD — that is, that the side of the pentagon to be inscribed in the circle ABCD, when produced, meets the mark F. Let the straight line AF then be joined, cutting the circumference ALB in the point M. I say that AM is the side of the pentagon to be inscribed in the circle ABCD, and so on.

Diagram. A circle with A at the top, C at the bottom, B at the left and D at the right, the two diameters AC and BD crossing at the centre E. The horizontal diameter is produced to the left well beyond the circle, to G; F is marked on that produced line between G and B. On the arc between A and B lie L (higher) and M (lower). From A a set of straight lines fans down and to the left, meeting the arc at L and at M and running on outside the circle to G. A dotted line runs from M across to E, and a second dotted line runs from M down and to the right to C; a broken (dashed) line runs from G down and to the right to C, and another from G up and to the right toward A, so that the triangle AGC appears in broken rule.

- A (top of the circle): A

- L (on the arc, upper left): L
- M (on the arc, below L): M
- G (far left, on the produced horizontal): G
- F (on the produced horizontal, between G and B): F
- B (left end of the horizontal diameter): B
- E (centre of the circle): E
- D (right end of the horizontal diameter): D
- C (bottom of the circle): C

CLAVVS.

I should have thought you deserved pardon — a man by no means on the friendliest terms with truth — if you merely put forward falsehoods as truths. But that you should labour with so much effort to demonstrate this lying proposition of yours, partly by murky circumlocutions fetched from every quarter, partly (as your habit is) by perpetually begging the question, and often bringing in matter foreign both to the truth and to the question at hand — who would pardon that in a learned man, which is what you wish to be? Take, for example, the claim that BG is an apotome, and so on. The falsity of the proposition consists in this. Since the triangle AGC is equilateral by construction, the angle GAC will be a third part of two right angles, that is, 60 degrees. Next, since AM is the side of the pentagon, draw the straight line ME: the angle AEM will be 72 degrees,^a which is double the angle AGM, and so the angle AGM will be 36 degrees, and its complement CAM 54 degrees. And finally the angle BAE is 45 degrees. Now with the whole sine AE set at 10000000: EG is the tangent of the angle GAE of 60 degrees, namely 17320508; EF is the tangent of the angle FAE of 54 degrees, namely 13763820; and EB is the tangent of the angle BAE of 45 degrees, namely 10000000. These tangents do not exceed one another by equal amounts. The excess GF is 3556688, whereas FB is 3763820. Therefore the sides of the hexagon, of the pentagon and of the square do not cut off equal segments on the diameter DB produced. Do you not then acknowledge, Scaliger, that your proposition is faulty and false? Do you now want to recognize with me where in the end it goes wrong? I will show you. Bring your whole mind to bear on this.

[Margin: ^a 20. tertij.]

The five values stand in a ruled frame in the left margin of this passage:

| | |
|-----|----------|
| EF, | 13763820 |
| EB, | 10000000 |
| GE, | 3556688 |
| FB, | 3763820 |

S C A L I G E R in eadem propos. 12.

Let another circle ABCD be described, whose diameter AC, cutting the diameter BD, is produced toward the parts M, or G. Let DM be joined, equal to the diameter BD. AM being bisected in F, let FD, FB be joined. And so, as you see, here MD holds the place of the straight line AG in the other circle, and AM is the apotome holding the place of BG. What has to be shown is that the triangle BFD is one of the five triangles into which the pentagon is resolved. For by the same procedure it will be shown that DF — that is, AF (in the other circle) — is the side of the pentagon. With centre F and radius FD, or FB, let the circle GBID be described. Let the equal straight lines BI, BK be joined, and from IB produced indefinitely to N let BH be cut off equal to FB. Let the straight line HF be joined, cutting the circumference GKBID in K. Then from HI let HL be cut off equal to HK, and so on.

Diagram. Two overlapping circles. The lower, smaller circle has A at the top, C at the bottom, B at the left and D at the right, its two diameters crossing at the centre E. The larger circle, drawn about the point F as centre, has G at its top and passes through B on the left, D on the right, and I at the bottom (I lying inside the smaller circle, on the vertical line below E). One straight vertical line runs down through the whole figure, carrying in order from the top G, M, F, A, E, I, C; the horizontal line B–E–D crosses it at E. From F straight lines run down-left to B and down-right to D, and a long straight line runs from F down and to the left through K to H, cutting the larger circle at K. To the left of the figure, a second straight line comes in from N at the upper left, passes through H, then through L, and continues down and to the right to B and on to I; K is joined to B by a short line.

- G (top of the larger circle): G
- M (on the vertical line, below G): M
- F (on the vertical line, centre of the larger circle): F
- A (on the vertical line, top of the smaller circle): A
- E (centre of the smaller circle, on the horizontal): E
- B (left, on both circles): B
- D (right, on both circles): D

- I (on the vertical line below E, on the lower arc of the larger circle): I
- C (bottom of the smaller circle): C
- K (on the larger circle, at the left): K
- L (below and left of K): L
- H (further left, on the line from N): H
- N (far upper left, the end of the produced line): N

CLAVIVS.

On whose authority, in the end — on whose agreed concession — is it granted you that the straight line FH passes through K? What if your opponent denies it, and maintains that it falls a little above K, or below? Will you prop up on your own shoulders a demonstration collapsing along with you? Take care, rather, that it does not crush and grind you as well in its fall. For you will not even have the triangles HKL, FKB — and yet you use them in what you go on to add. Unless, then, you want all your labour to be lost, you will first have to prove that the straight line FH passes through K, if BK has been taken equal to IB and BH equal to BF.

Here at last you are true to form, in that you present yourself infected with the same flaw in the following proposition, in the finding of the sides of the heptagon, the enneagon, and the other figures with an odd number of sides. For here is what you have in the demonstration of the following proposition 13.

SCALIGER *in propos. 13.*

If on the same straight line the isosceles triangles into which the equilateral polygons to be inscribed in a circle are divided have been set up, then the angles at the vertex of the polygons having an odd number of sides bisect the interval lying between the two nearest sides of the polygons having an even number of sides.

In the circle ABCD let the diameter AC, produced infinitely, cut the diameter BD at right angles, and let it be cut at S, as if the straight line SD, equal to the straight line AC, had been joined from the limit D and had made the equilateral semi-triangle [isopleuron] DSE, as was shown above. Again let the interval AG be cut off, equal to the side of the square to be inscribed in the circle ABCD. If then the straight line DG were joined, the angle EGD would be the half-angle of one of the 8 triangles into which the octagon to be inscribed in the circle whose semidiameter is GD is resolved, by 20. of the third book. Lastly let the interval AS be bisected at R. If DR were joined, it would be the half-angle of one of the five triangles into which the pentagon is resolved, as was shown above. Therefore let the interval RI be made

equal to the straight line DR that is to be joined. Again, if the straight line DI were joined, IDE would be one of the ten semi-triangles into which the decagon is resolved, by the same 20. of the third book. Let the intervals SG, GI be bisected at the points F, H. Let the straight line DF be joined, cutting the circle ABCD at V. It has to be shown that DV is the side of the heptagon to be inscribed in the circle ABCD. With centre F and radius FB, or FD, let the periphery PBON be described. Let the straight line PB be joined, and let BO, ON be joined equal to it. And so the peripheries subtended by them are equal, by 29. of the third book. Let P B be produced toward Q, infinitely, and let it be met by the straight line from the limit F which joins N, the end of the periphery O N, and runs on until it meets the infinite line P Q at the point M. Let the straight lines FB, FL be joined, and from the straight line PM let the straight line ML be cut off equal to MN. Let NL be joined. Since the angles NOF, BOF are equal by construction, then, the common side FL being produced, the angles below the base NOL, BOL will be equal, by 5. of the first book; and by 4. of the same the bases LN, LB will be equal in the triangles NLO, BLO, and the angle ONL equal to the angle OBL. But the angles FNO, FBO are equal by construction. Therefore the whole angle LNF is equal to the whole angle LBF. Again FNL, MNL together on the straight line MF are equal to the angles FBM, FBP together on the straight line PM, by 13. of the first book; and when the equals FNL, FBM have been taken away, there remain equal FBP, MNL. Therefore the angles MNL, MLN are equal to the angles FBP — that is, FNO — and so on.

Diagram. The block occupies the upper right of the page, the italic demonstration running down its left side. A long straight line runs vertically down the right-hand edge of the figure; along its upper stretch short cross-ticks mark a series of lettered points, reading downward: I, H, G, F. Below F the same line carries three further lettered points before it reaches the circle. From F a sheaf of straight lines radiates down and to the left. Low in the figure a circle is drawn, its vertical diameter lying along that same straight line (the topmost of the three points just named sits where the line meets the top of the circle) and its horizontal diameter running from B at the left to D at the right; E is lettered at the centre, and below E, still on the vertical, stands P, then the lowest point of the circle. A second, larger curve passes through B and swings round to the right and down, cutting the vertical line below the centre; V is lettered where a line from the upper part of the figure meets the circle on its upper right, and X is lettered just to the left of the vertical, above the horizontal diameter. To the left of the circle, N stands high and L directly below it, joined by a short vertical segment; O lies between them and B, on a line running from the upper right down to L. Two long straight lines run far out to the left, converging at a point lettered M, with an italic swash Q lettered

just beyond it at the extreme left: the upper of the two comes down from F by way of N, the lower comes from B by way of L.

- I (top of the vertical line, uppermost tick): I
- H (next tick below I): H
- G (next tick below H): G
- F (next tick below G; the point from which the sheaf of lines radiates): F
- K [?] (first lettered point below F on the vertical; the glyph reads as a capital K, but no K occurs anywhere in Scaliger's proposition 13 or its demonstration): K
- S [?] (second lettered point below F on the vertical; the glyph reads as a capital S): S
- R (third lettered point below F on the vertical, immediately above the circle): R
- A (on the vertical, at the top of the circle): A
- X (just left of the vertical, above the horizontal diameter, on a curve): X
- V (on the circle, upper right, where a line from above meets it): V
- E (centre of the circle, at the crossing of the two diameters): E
- D (right-hand end of the horizontal diameter): D
- B (left-hand end of the horizontal diameter): B
- P (on the vertical, below E): P
- [?] (the lowest point of the circle, on the vertical; the bold glyph images with a crossbar and so reads as G, but this is the position of the fourth point of circle ABCD — the letter is not resolvable with confidence at native resolution): [?]
- N (upper left, joined downward to L and rightward toward F): N
- L (directly below N): L
- O (between N/L and B, on the line running down to L): O
- M (far left, where the two long lines converge): M
- Q (extreme left, an italic swash capital, beyond M): Q

CLAVIUS.

Truly, you are never anything but exactly like yourself, never anything but the same. Look at your own propositions: you will see that they come back round to the same thing over and over. For consider — when you order the straight line FOL to be joined, and the straight line ML, equal to MN, to be cut off from the straight line PM: even granting that you do not press the truth all that far, can you

still deny, you pseudo-geometer, that you are begging the question? For suppose someone argues that the straight line cut off from MP equal to MN ends either short of L or beyond it: with what a crash will everything you infer from it in that feeble demonstration of yours come down on your own head!

SCALIGER *in eadem propos. 13.*

But it must always be observed that the last line, such as LF, being equal to LM, and FM equal to PM, cuts the limit of the last periphery precisely; otherwise there is an error.

CLAVIUS.

What a ridiculous caution — ridiculous even to Scaliger himself! For if you think you have proved from your premises that the straight line LF will always be equal to LM, and FM to PM, what need was there of any caution at all? Could anyone keep from laughing if Euclid, where he teaches in proposition 11 of the first book how to erect a perpendicular to a straight line from a given point on that line, had gone on to warn that it must be drawn in such a way as not to make one angle greater than the other? Anyone could see from his construction that the two angles come out equal, so that nobody has any need of such a warning. Add the laughter that same Euclid would have raised when in proposition 16 of the third book he proves that the perpendicular drawn at the end of a diameter falls wholly outside the circle, touching it there — if he had issued the warning that everyone had already noticed, namely that this perpendicular must be drawn so as not to cut the circle. For by the very fact that it is proved to be perpendicular, it is proved that it does not cut the circle. No less laughter is owed to you, who direct that the lines LF, FM be drawn so as to be equal to the lines LM, PM, when you suppose yourself to be proving that they are equal in any case. And yet I have not taken you on for mockery in such a way as not to see some reason why you should after all want us warned of this: it is, of course, because you could not prove that LF, LM and FM, PM are equal — or that, if LM is taken equal to MN, the straight line FL must necessarily pass through O, which is nevertheless absolutely necessary for the rest of the demonstration.

The hidden shoals [*syrtes*] of your demonstration — or its sins, if you prefer that word — I have now, I think, laid open to you sufficiently; your ...

learn from me that your proposition is false: namely, that the side of the heptagon DV, when produced, does not bisect the segment SG between the points S and G, on which the sides of the hexagon and the octagon would fall; nor does the side of the enneagon bisect the interval GI between the points G and I, on

which the sides of the octagon and the dodecagon would fall. This we shall carry through by means of the tangents, just as we showed above that the intervals AR, RS are not equal, supposing the sides of the square, the pentagon, and the hexagon were to fall on the points A, R, S.

For set the whole sine DE at 10000000. The angle SDE will then be 60 degrees, as was said above, and its tangent ES 17320508. The angle FDE, half the angle of the heptagon, will be $64 \frac{2}{7}$ degrees — that is, 64 degrees 17 $\frac{1}{7}$ minutes. (For since one angle of the heptagon is 1 [numeral: ?]/7 of a right angle, its half will be 5/7. Say, then: if one right angle gives 90 degrees, what will 5/7 give? and you will find $64 \frac{2}{7}$ degrees. Next: if 1 degree gives 60 minutes, what will $\frac{2}{7}$ give? you will find 17 $\frac{1}{7}$ minutes.) Its tangent EF is 20765212. For the tangent of 64 degrees 17 minutes is 20763004, and to one seventh of a minute there correspond 2208 parts, which together with 20763004 make up 20765212. For if one minute, between the tangent of 17 minutes and that of 18, calls for a difference of 15459, one seventh of a minute will call for a difference of 2208, and so on. Lastly the angle GDE, half the angle of the octagon, will be $67 \frac{1}{2}$ degrees, since one whole angle contains 135 degrees. And the tangent EG will be 24142137. These three tangents do not exceed one another by equal amounts: GF is 3376925, whereas FS is 3444704. In just the same way we shall find that the excesses IH, HG are unequal — and so for the other figures. And if you admit that all this is exactly as I have said (as, unless you have lost every sense of shame, you cannot deny), then admit this too: that your proposition 13 has nothing true in it.

[Inset display: two ruled frames — each a closed box, with rules above, below and on both sides, and no internal column rules — are set into the text column itself, flush with its left-hand edge, beginning immediately under the line *SDE, grad. 60. vt supra dictum est*, and together running about nine lines deep; for that whole depth the text is turned around them on the right in a short measure. The upper frame holds the three rule-of-three lines of the calculation above, each closing with the question mark that stands for the fourth term:]

1 90 [numeral: ?]/7 ?
 1 60 $\frac{2}{7}$?
 1 15459 $\frac{1}{7}$?

[Inset display: the lower ruled frame, set directly beneath the upper one in the same inset position, listing the three tangents and the two differences, the differences ruled off beneath:]

EG, 24042137 [?]
 EF, 20765212
 EB [?], 17320508

SCALIGER *in propos. 14.*

On a given finite straight line to construct an isosceles triangle, one or other of whose base angles shall have a given ratio to the remaining one.

CLAVIVS.

In this proposition, my dear Geometer, you commit a paralogism. Do you not see what you have laid down earlier? That you had correctly found the sides of the polygons, of course — and that is false. What wonder, then, if from badly laid premises you draw bad conclusions? You go wrong at the very door.

SCALIGER *in Propos. 15.*

To inscribe in a given circle an equilateral figure with an odd number of angles.

CLAVIVS.

But you are consistent: you commit your paralogisms in the same key, so as not, presumably, to fall out with yourself. Very well: you assumed that you had constructed an isosceles triangle one or other of whose base angles has a given ratio to the remaining one. And since that is as false as you are a false mathematician, you can see — unless you are altogether blind — what follows from this false assumption.

SCALIGER *in propos. 16.*

Given four unequal straight lines, to find a circle such that a quadrilateral composed of the four given lines can be inscribed in it.

CLAVIVS.

What a thoughtless mathematician, to set a problem that is impossible! For unless any three of the four lines taken together are greater than the remaining one, no quadrilateral can be constructed from them, since in every quadrilateral any three sides taken together are greater than the remaining one — or (what comes to the same thing) any one side is less than the other three. In the figure immediately preceding, take the quadrilateral FOBD, in which the diagonal FB has been drawn. I say that the side, FO for example, is less than the three OB, BD, DF. [Margin: a 20. primi.] For since FO is less than the two OB, BF, and BF is less

than the two BD, DF, it is clear that FO is less than the three OB, BD, DF. Why, then, did you not learn from Euclid that this condition had to be added — that any three of the lines taken together must be greater than the fourth? — just as he himself, in proposition 22 of the first book, when he wanted to construct a triangle out of three lines, attached this condition: *But two of them, taken in every combination, must be greater than the remaining one*, since in every triangle two sides taken in every combination are greater than the remaining one. Or was it perhaps your own sharp insight that three sides of a quadrilateral are always greater than the remaining one, and that you therefore supposed a quadrilateral could be constructed out of any four lines whatever?

Furthermore, in the demonstration of this proposition 16 you go wrong so often and in so many things that you seem to call not for a refutation from me — by now I am weary of it, and ashamed to spend such labour so badly — but for a boy's whipping; and all the more so since it has no more to do with the squaring of the circle than an ox has to do with the Pillars of Hercules.

SCALIGER in propos. 17.

To inscribe a segment of a hexagon in the complement of the hexagon's hatchet-figure [securicula].

It is to be considered whether a segment of a hexagon — or (what comes to the same thing) two half-segments of a hexagon — can be inscribed in the complement of the hexagon's hatchet-figure. To the straight line CED, of unlimited magnitude, let the straight line EV, infinite, be perpendicular. Let any equal intervals EC, ED be cut off. Then with centres C, D, and with radii CE, DE, let the peripheries EG, EH be described. Again with the same radius, but with E as centre, let the periphery GFH be described; and let the straight line EF, cut off from the infinite line EV — namely the semidiameter of the peripheries — bisect it at F. The peripheries ENG, EH, GFH are therefore equal, by definition 1 of the third element, because the straight line GH that joins them is equal to the semidiameters EF, CE, DE. Therefore by definition 1 of this book the figure ENG, FHE is the hatchet-figure of the hexagon, and the straight line RF is an apotome, as has been demonstrated elsewhere. Let RK be cut off equal to it, and let the segment GRHMKLG be made equal to the segment GRHFG. Each of them, therefore, will be a segment of the hexagon; and consequently the figure ENKGHE is the complement of the hatchet-figure, by definition 2 of this book. Now the apotome RF is at the least a little greater than one eighth of the semidiameter EF, as was demonstrated in 5 of this book; and therefore the whole FK is a little greater than two eighths of the semidiameter. And so the remainder KE falls a little short of six eighths of the semidiameter. It will therefore be greater than RG by a

little less than two eighths of the semidiameter EF , as is shown in the same 5 of this book. In the straight line EK , then, the height of the half-segment can be found, since the peripheries ENG , EH touch one another only at the point E , by 13. of the third book. From the point K let an infinite straight line be drawn parallel to CD , by 13. of the first book; from it let KB be cut off equal to the semidiameter DE , or to EC ; and from the same line again let the apotome BO be cut off, equal, that is, to the apotomes RF , RK . With centre O and radius OL — which is to be equal to BK , or to DE — let the periphery VLI be described. From the equals OL , BK let the common part OK be taken away: there will remain BO , KL equal. And so KL is an apotome; and therefore the periphery VLI is a segment of the hexagon, equal, of course, to the segment $GFHRG$. And KI will be equal to RG ; and $LIKL$...

... and $LIKL$, equal to $RFGR$. In the same way let AK be cut off equal to BK , and AQ equal to BO ; and with a radius equal to AK , or BK , or OL , let the periphery IMV be described. Thus there will be completed two half-segments IKL , IKM , equal to the half-segments GFR , GKR . Let the straight line CO be joined, cutting the periphery ENG at the point N . CN , then, is the semidiameter of the periphery ENG , by the definition of a circle; and consequently the remainder NO will lie wholly outside that periphery ENG . Now the straight lines ON , OL , and likewise the straight lines CN , CE , are equal by the definition of a circle. But OL , CE are equal by construction. Therefore ON , CN , diameters meeting one another at the point N , make one continuous straight line CNO — indeed CNO is continuous by construction; and consequently their peripheries will touch one another at that same point N . Nor will they anywhere else either touch or cut one another, by 13. of the third book. In the same way we shall prove that EH , IM touch one another in a single point, if the straight line DQ is drawn. Therefore a segment of the hexagon has been inscribed in the complement of the hatchet-figure — or (what comes to the same thing) two half-segments, which touch the two equal lateral segments at one point only. Accordingly there is left over besides a scrap of space out of the complement, and let it be called the remainder of the segment.

Diagram. The block sits at the top right of the page. A long horizontal straight line runs across the top, tick-terminated at both ends: C at the far left, E at its middle, D at the far right. A second horizontal line runs lower down, likewise tick-terminated: A at the far left with Q immediately to its right, and at the far right O with B immediately beyond it; this lower line passes through the points L , K , M in the middle of the figure. From C a long straight line slants down and to the right, crossing the upper arcs at N and running on to the right-hand end of the lower line. A vertical line descends from E through I , K , R and F to V , and continues a little below V . Between E at the top and V at the bottom two pairs of

arcs are drawn, forming a tall pointed oval crossed by a second, narrower one; N lies on the left-hand arc high up, and I on the vertical just below E. A third horizontal line, shorter than the others, runs from G at the left to H at the right, lower than the A–B line, and broad arcs sweep from G and from H up toward E and down toward V. The minuscule letters a and b stand just below L and just below M respectively, inside the figure (they are clearly small letters, contrasting with the capitals L, K, M immediately above them).

- C (left end of the upper horizontal line): C
- E (middle of the upper horizontal line, apex of the pointed oval): E
- D (right end of the upper horizontal line): D
- I (on the vertical, just below E): I
- N (high on the left-hand arc, where the slanting line from C crosses it): N
- L (on the lower horizontal line, left of centre): L
- K (on the lower horizontal line, at the vertical): K
- M (on the lower horizontal line, right of K): M
- a (minuscule; just below L): a
- b (minuscule; just below M): b
- G (left end of the short horizontal line): G
- H (right end of the short horizontal line): H
- R (on the vertical, below K): R
- F (on the vertical, below R): F
- V (on the vertical, at the lower point of the oval): V
- A (left end of the lower horizontal line): A
- Q (immediately right of A on the lower horizontal line): Q
- O (on the lower horizontal line toward the right): O
- B (right end of the lower horizontal line, beyond O): B

CLAVIVS.

Do you really suppose, Scaliger, that you have inscribed two half-segments of a hexagon in the complement of the hatchet-figure? For my part I doubt it; indeed I am certain you have not brought it off. For I detect two faults in your description. First, that without any proof you assume CN to be equal to ON. That will never be granted you unless you prove CD and CO to be equal. Your opponent will therefore say that the arc VLI does not pass through N, but either beyond it or short of it, and consequently that the half-segment LI is not inscribed in the complement of the hatchet-figure. The second fault is this. Even if it were granted

you that the arcs EG, IL touch one another at N, it would still be false that the figure inscribed in the complement of the hatchet-figure contains two half-segments. For since the straight line AB touches the arc GKH at K, and therefore cuts the arcs ILV, IMV at L, M above the arc GKH, the figure LIM will be equal to one segment, being composed, that is, of two half-segments. Hence, once the mixed triangles aLK, bMK are added, the inscribed figure will be greater than one segment. From which it follows that the next two demonstrations, which hang on this inscription, collapse altogether. I pass over the fact that it is superfluous, when you say that RF is an apotome, since this does nothing toward the demonstration.

S C A L I G E R in lemmate ante propos. 5. Appendicis.

If from two commensurable magnitudes two commensurable magnitudes are subtracted, the remainders will be commensurable.

From the two commensurable magnitudes AC, DF let two commensurable magnitudes BC, EF be taken away. I say that the remainders AB, DE are commensurable. For since AC, DF are by hypothesis commensurable, they will have to one another the ratio of a number to a number, by 5. of the tenth book; and in the same way BC, EF will have the ratio of a number to a number. The numbers BC, EF, therefore, subtracted from the numbers AC, DF, will leave the numbers AB, DE. And so the magnitudes AB, DE will have the ratio of a number to a number. Therefore by 6. of the same the two magnitudes AB, DE are commensurable.

Diagram. Two horizontal straight lines set one above the other in the outer part of the text block, each terminated by an upright tick at either end and divided by a further tick within. The upper line is lettered A at its left end, B at the interior division, and C at its right end. The lower line is lettered D at its left end, E at the interior division, and F at its right end.

- A (left end of the upper line): A
- B (interior division of the upper line): B
- C (right end of the upper line): C
- D (left end of the lower line): D
- E (interior division of the lower line): E
- F (right end of the lower line): F

CLAVIVS.

This lemma, although as a first principle it may look self-evident by the very light of nature, is not true — except when BC, taken away from the whole AC, is commensurable with it, or when the ratio of the whole AC to the whole DF is the same as the ratio of the part removed, BC, to the part removed, EF. For (to offer a parallel example of the kind you use in proposition 5 of the Appendix) let there be two magnitudes AB, CD, equal and therefore commensurable; and let the magnitudes taken away, AE, CF, stand in subquadruple ratio [*proportione subquadrupla* — AE one fourth of CF], and be for that reason commensurable as well. But let AE be incommensurable with AB. I say that the remainders EB, FD are incommensurable. For since the whole AB is posited incommensurable with the part AE, a [Margin: a 17. deci.] AE, EB will be incommensurable. Since, then, EB is incommensurable with AE, and — taking AG equal to CF, so that EG is triple AE, seeing that the whole AG is quadruple that same AE — GE is commensurable with AE, b [Margin: b 13. deci.] EB, EG will be incommensurable; c [Margin: c 17. deci.] EG, GB will be incommensurable too; d [Margin: d 17, deci.] and consequently the whole EB is incommensurable with the part GB, and therefore also with FD (which is equal to GB by construction). Which was to be shown.

But if AE is commensurable with AB, then and only then will the remainders EB, FD be commensurable. For since the whole AB is posited commensurable with the part AE, e [Margin: e 16. tertij.] AE, EB will be commensurable. Since, then, EB is commensurable with AE, and GE is commensurable with that same AE, f [Margin: f 12. deci.] EB, GE will be commensurable too. And since the whole EB is commensurable with the part GE, g [Margin: g 16. deci.] GE, GB will also be commensurable. h [Margin: h 16. deci.] And consequently the whole EB will be commensurable with the part GB, and therefore with FD as well, which is equal to GB by construction.

Diagram. Two more horizontal straight lines set one above the other at the outer edge of the text block, each terminated by an upright tick at either end and subdivided by interior ticks. On the upper line A stands at the left end, E immediately to its right at the first interior tick, then two further interior ticks, then G, and B at the right end. On the lower line C stands at the left end, followed by a row of interior ticks, then F, with D at the right end.

- A (left end of the upper line): A
- E (first interior tick of the upper line, close to A): E
- G (interior tick of the upper line, close to its right end): G

- B (right end of the upper line): B
- C (left end of the lower line): C
- F (interior tick of the lower line, close to its right end): F
- D (right end of the lower line): D

You do not, then, infer correctly in proposition 5 of the Appendix when you say: the sector GDE is commensurable with the sector GEF, because it is equal to it; and the segment DE in the former sector is commensurable with the four segments in the latter sector; therefore the remaining hexagon-triangle in the former sector, made up of the five triangles LOP, is commensurable with the remaining segment in the latter sector. You do not, I say, infer correctly, because it is not established whether the hexagon's segment is commensurable with the sector or not. And if it is incommensurable — as is likely — you conclude nothing whatever. See, then, how well versed you are in geometry, you who propound a universal lemma that is not true except in certain cases.

But let us demonstrate the falsity of the lemma by further examples. Let the magnitude AB be triple the magnitude CD, and AE double CF; and let AE be incommensurable with AB. I say that the remainder EB is incommensurable with the remainder FD.

For let it be made that as AB is to CD, so EB is to GD. And since AB is posited triple CD, EB too will be triple GD. [Margin: a 19. quin.] The remainder AE, therefore, will also be triple the remainder CG. Now since AE is posited double CF, CG will be less than CF; and so the point G does not coincide with the point F.

Diagram. Two bare labelled straight-line diagrams set into the text block, one above the other, belonging to the first demonstration.

- Upper rule: a long horizontal line with a vertical terminal bar at each end. A (bold capital, left, above the left terminal); E (bold capital, above an interior tick set well to the left of centre); B (bold capital, right, above the right terminal). Besides the tick under E the rule carries further short interior ticks; their exact number does not resolve at this resolution [?]. No other letters appear on this rule — in particular the block shows no F, G, C or D.
- Lower rule: a short horizontal line with a vertical terminal bar at each end, carrying, left to right, C (above the left terminal), G and F (bold capitals, above two closely-set interior ticks), D (above the right terminal).

Since, then, AE and CF are commensurable — for they stand in the double ratio — while AE is incommensurable with AB, [Margin: b 14. deci.] CF too will be incommensurable with that same AB. But AB is commensurable with CD; [Margin: c 13. deci.] therefore CF and CD will be incommensurable. And since as AB is to CD, so EB is to GD, and AB is commensurable with CD, [Margin: d 10. deci.] EB too will be commensurable with GD. Again, since as the whole AB is to the whole CD, so the part taken away, EB, is to the part taken away, GD, the remainder AE will be to the remainder CG as the whole AB is to the whole CD. Since, then, AB is commensurable with CD, [Margin: e 10. deci.] AE too will be commensurable with CG. But CF is likewise posited commensurable with that same AE. [Margin: f 12. deci.] Therefore CG and CF are commensurable as well; [Margin: g 16. deci.] and consequently CG and GF will also be commensurable. But AE was shown commensurable with that same CG; [Margin: h 12. deci.] therefore AE and GF too will be commensurable. [Margin: i 17. deci.] Yet AE is incommensurable with EB, because the whole AB is by hypothesis incommensurable with its part AE. [Margin: k 14. deci.] Therefore GF too is incommensurable with that same EB. Since, then, EB and GD have been shown commensurable, while EB is incommensurable with GF, [Margin: l 14. deci.] GD too will be incommensurable with that same GF; [Margin: m 17. deci.] and consequently GF and FD will be incommensurable; [Margin: n 17. deci.] and therefore GD and FD will be incommensurable also. Since, then, EB has been shown commensurable with GD, and GD is commensurable [recte: incommensurable — the step immediately preceding proves GD and FD incommensurable] with FD, [Margin: o 14. deci.] EB too will be incommensurable with that same FD. Which was the thing proposed.

ANOTHER WAY, in lines alone. Let the whole AB be rational (that is, commensurable with the assigned rational line) and commensurable with the whole CD — specifically, let AB be triple CD. Then let AE be cut off equal to CD, and let AF be the side of the square whose diagonal is AE, and let it be double CG, so that the cut-off segments AF and CG are commensurable as well.

Diagram. A second pair of bare labelled straight-line diagrams, set one above the other, belonging to the "Aliter" demonstration.

- Upper rule: a long horizontal line with vertical terminal bars. A (bold capital, above the left terminal); then, close together toward the left, H, F, E (bold capitals, each above its own interior tick), in that order; then a long undivided stretch to B (bold capital, above the right terminal).

- Lower rule: a horizontal line with vertical terminal bars. c (above the left terminal); then, close together toward the left, ı and 6 (bold capitals, each above its own interior tick), in that order; then a stretch to d (above the right terminal).
- No other letters appear in either block.

I say that the remainder FB is incommensurable with the remainder GD. For suppose, if it can be done, that it is commensurable. Since AF is commensurable in square with AE, and AB is commensurable in length with that same AE (which is equal to CD), [Margin: p 12. deci.] AF and AB will be commensurable — not indeed in length (for otherwise, as I showed on X.12, since AB is commensurable in length with AE, that is, with CD, AF too would be commensurable in length with that same AE, which is contrary to the hypothesis) — but in square only. [Margin: q 74. deci.] Therefore FB is an apotome. [Margin: r 104. deci.] Therefore GD too, being commensurable with FB, is an apotome. And if it be made that as FB is to GD, so AF is to IG, then, as Euclid demonstrated in proposition 104 of Book X, IG will be the annex [congruens] of the apotome GD, so that IG and ID are rational and commensurable in square only. [Margin: s 12. quin.] For the whole AB will be to the whole ID as FB is to GD. Since, then, FB and GD are commensurable in length (on my opponent's own supposition), AB and ID too will be commensurable in length, and so likewise AF and IG. And since AB and AF are rational, ID and IG, being commensurable with them, will be rational too. But AB and AF are commensurable in square only. Therefore, as we showed on X.10, ID and IG will be commensurable in square only. Since, then, they are rational, [Margin: t 74. deci.] GD will be an apotome and IG its annex.)

But IG will not be the same as CG. For if FB were to GD as AF is to CG, [Margin: u 12. quin.] then AB would also be to CD as (AF) is to CG [the print sets no second term here: "esset quoque AB, ad CD, vt ad CG"] — which is false, since AB is by hypothesis triple CD, whereas AF is by construction double CG.

Again — AF being bisected at H — since AF and AH are commensurable in length, while AF is incommensurable in length with AE, [Margin: x 14. deci.] AH too will be incommensurable in length with AE. [Margin: y 12. deci.] Since, then, AH and AE are incommensurable, each of them being commensurable with AF — the former in length, the latter in square only — it follows that AH, that is, CG which is equal to it, is commensurable in square only with AE, that is, with CD; [Margin: z 74. deci.] and consequently GD is an apotome, whose annex is CG. Therefore the apotome GD has two annexes, IG and CG. [Margin: a 80. deci.] Which is absurd. Therefore FB and GD are not commensurable. Which was the thing proposed.

I have been somewhat long-winded in demonstrating the falsity of Scaliger's lemma, partly so that its falsity may be convicted more evidently, and partly because several other mathematicians use it too, as though it were true, to prove that the circumference of a circle is commensurable in length with the diameter — a matter in which they too have gone astray.

SCALIGER, in propos. 2. secundæ partis Cyclometriæ, & in propos. 6. Appendicis.

THE CIRCLE amounts to [potest] thirty-six segments of the hexagon inscribed in that same circle.

CLAVIUS.

Do you really assert, Scaliger, that you have inscribed a segment of the hexagon in the complement of the hatchet [securicula]? But where did you inscribe it? Outside the margin, I suppose — for I myself have never seen it. The earlier inscription of yours, the only one I have seen, is a paralogism. Since, then, this dictum of yours cannot be traced, nor this position of yours either, this proposition of yours is left undemonstrated, and the fault is your own. But what wonder that you could not demonstrate it, when it is false altogether? This I show as follows, from what Archimedes has genuinely demonstrated — and not by paralogism, as you slanderously allege.

If the circle were equal to 36 segments of the hexagon, the hexagon would be equal to 30 segments, and a single chisel [scalprum] (your name for a sector) to six segments. The segment, then, would be a fifth part of the triangle at the centre. All of which is false on Archimedes' showing. For with the diameter put at 70, the circumference of the circle will be 220 — greater than the true one; and the area accordingly 3850, greater than the true one. A sixth part of this, $641 \frac{2}{3}$, will give a single sector, likewise greater than the true one; and a sixth part of that, $106 \frac{17}{18}$, will on your account be a little greater than a single segment. Taken five times, therefore, it will yield you a triangle of $534 \frac{13}{18}$ — which is not true, since by what we demonstrated in Book 4, chapter 2, number 5 of the *Geometria practica*, the hexagon's triangle (one side being put at 35) is only $530 \frac{5}{6}$. Subtract this from the sector, which we found to be $641 \frac{2}{3}$, and it will leave a single segment of $150 \frac{5}{6}$ [numeral: ?] — far greater than the $106 \frac{17}{18}$ found at first; greater, I say, than a sixth part of the sector. The hexagon's segment, then, is not a sixth part of the sector, as you would have it, but greater.

Again, with the diameter put at 70, the circumference will be $219 \frac{51}{71}$ [numeral: ?] — less than the true one; and therefore the area less than the true one, $3847 \frac{76}{142}$. A sixth part of it, that is, a single sector, is $641 \frac{218}{852}$.

Therefore, on Scaliger's account, a sixth part of this will give a single segment of the hexagon as $106\frac{478}{5112}$ [numeral: ?]. But if from the sector just found, $641\frac{218}{852}$, one takes away the hexagon's triangle found a little earlier, $530\frac{5}{6}$, the remainder will make a single segment of about $110\frac{2160}{5112}$ — which is much greater than the $106\frac{478}{5112}$ found before. And so, whether you take the circumference greater than the true one on Archimedes' showing or less, you plainly see

that you are demonstrating a falsehood. For the segment of the hexagon is neither $\frac{1}{36}$ of the whole circle, nor $\frac{1}{6}$ of the sector, nor $\frac{1}{5}$ of the triangle at the centre, as you falsely supposed.

But so that you may see your own shameful ignorance most clearly, as in a mirror, and recoil from the sight of yourself as from a rabid dog, weigh what I am about to say. The segment of the hexagon, found by Archimedes' solid demonstration according to the lower limit, is $110\frac{2160}{5112}$; and this, multiplied by 36, produces the number $3975\frac{1080}{5112}$ — far greater than the area of the circle, 3850, which is itself greater than the true area. Are you not ashamed, then, to lie so conspicuously as to say that the circle is equal to 36 segments of the hexagon?

All your chimeras collapse under this, the chimeras with which you try to square the circle; so it is not worth the trouble to waste time refuting them, since they contain nothing true. I shall raise only one objection against your quadrature in the corollary and scholium of proposition 3 of the second part of the *Cyclometria*.

SCALIGER, in coroll. & scholio propos. 3. secundæ partis Cyclometriæ.

From this it is clear that the area of a circle is equal to the rectangle contained by the side of the equilateral triangle inscribed in that very circle and by nine tenths of the diameter.

CLAVIVS.

And so, on your view, if the diameter of the circle is 16, the area of the circle will be greater than 199 but less than 200 — which is entirely false on the strength of what Archimedes has demonstrated. For this area of yours is less than the area reckoned according to Archimedes, less even than the one that is smaller than the true area. For with the diameter put at 16, the area smaller than the true one is found to be $201\frac{1}{71}$, while the area greater than the true one is $201\frac{1}{7}$; so that the true area lies between $201\frac{1}{71}$ and $201\frac{1}{7}$, whereas on your account it lies between 199 and 200, each of which is less than the true area.

But look at your ineptitude — better, your ignorance — in squaring the circle: for if your method of squaring is true, it follows that the part is greater than the whole. Do you deny it? Then attend. With the diameter put at 20000000, the side of the equilateral triangle described in the circle will be 17320508 75/1000 — that is, the root of the square which is triple the square of the semidiameter, [Margin: a 12. tertijdec.] since the triangle's side is in square triple the semidiameter. We searched out this root by appending 000000, so as to find the approximation in thousandth parts, as we set out in proposition 20 of Book 6 of the *Geometria practica*. If, then, this side is multiplied by 9/10 of the diameter, that is, by 18000000, there will be produced, on your reckoning, the area of the circle as 311769145350000.

But with the same diameter of 20000000 put down, the area of the figure of 36 equal sides described inside the circle is 312566567093244. For one side of the said figure is 1743114 — double the sine of 5 degrees, of course — and hence the semi-perimeter is 31376052; and this, multiplied by 9961947 (the perpendicular dropped from the centre onto the side, which the sine of the complement of 5 degrees gives, the semidiameter being put at 10000000), produces the area 312566567093244, which is greater than your area of the circle, 311769145350000. And that is more absurd than any absurdity. Let the reader see, then, what a distinguished squarer of the circle Scaliger is, and let him compare Scaliger's quadrature with Archimedes' quadrature of the circle, which exhibits the area of that same circle as greater than 31408450742253 [numeral: ?] (since this area is less than the true one) — and that area is indeed greater than the area of the 36-sided figure given above, as is only proper.

Go now, ranter [Blatero], and boast in the scholium of proposition 6 of the Appendix that you have demonstrated the circle to be less than the rectangle contained by the semidiameter and by a length three and one-seventh times the length of the diameter (you ought to have said: *and by half of* the length three and one-seventh times the length of the diameter) — against Archimedes. Brag that you have produced a rectilinear figure equal to the circle, and have done what no one ancient or modern has done. Shout it out in the scholium of theorem 10 of the Appendix: Where, then, are those men who conceive the circle as contained by the semidiameter and the semi-perimeter? How false is their opinion! How false the all-but-divine Archimedes himself, for whom such a circle is 201 1/7! The circle, therefore, is in square less than the rectangle contained by the semidiameter and half of the straight line which as a whole is less than three and one-seventh times the diameter. Proclaim in the scholium of theorem 12 of the Appendix how far from the truth those men are who make the circle whose

diameter is 16 greater than 200. For all these outcries of yours are empty and contain nothing solid; and they are most evidently refuted by what Archimedes demonstrated.

It irks me to waste time refuting the 13 propositions that follow, since they are all false — deriving their whole force, as they do, from your quadrature, which does not square with the truth in the least.

Finally, I have not leisure enough to refute the last proposition of the *Cyclometrica elementa*, by which you try to overturn Archimedes' quadrature of the parabola; for you appear neither to understand what a parabola is nor to penetrate Archimedes' most subtle reasonings (which indeed exceed the grasp of your understanding). But, to have regard for Archimedes' name and standing, I shall expose your incompetence in geometry in this place too.

SCALIGER in propos. 19. secundæ partis Cyclometriæ.

TO EXHIBIT a parabola which has, to the triangle set up on the same base and with the same height as the parabola, a ratio less than sesquitertian [sesquitertia — 4:3].

Let there be a cone KBC whose base is the circle KBNC, cut normally by the diameters KN, BC. Since the straight lines KB, KC are sides of the square inscribed in the circle, and the angle K is right, the cone KBC will be right-angled [orthogonius], by definition 18 of Element 11. With the side KB bisected at L, and DL joined, the angle DLK will be right, by III.3. The angle K too is right. Therefore the straight lines DL, CK are parallel, by I.28. Hence the cone KBC, cut through DL, will make a parabola. Let it make the parabola BLEMC — the straight line DE, that is, being cut off, which is equal to DL, and which therefore is the height of the parabola, whose base is equal to the diameter of the conic base and is therefore the greatest of all parabolic bases in the section of a right-angled cone; and the whole of it is inscribed in the triangle KBC, that is, not cut by the triangle KBC — that triangle being made by a plane cutting the cone through the vertex and the axis, by Apollonius, Conics I.3. Let the triangle EBC be inscribed in the same parabola. Let us show that the parabola BLEMC has, to the inscribed triangle (that is, to the triangle on the same base and of the same height), a ratio less than sesquitertian, etc.

Diagram. A circle drawn in heavy line, set in the outer right of the text block beside Scaliger's italic lemma, with a straight-line construction inside it and one label above it.

- A (bold capital) at the very top, above the circle, at the apex of two straight lines that run down to the left and to the right.

- κ (small capital, immediately below A) on the circumference at the top of the vertical diameter.
- A vertical straight line runs from A down through κ and the centre to the bottom of the circle.
- β (bold capital) at the left end of the horizontal diameter, on the circumference; γ (bold capital) at the right end, on the circumference.
- δ (bold capital) at the centre, where the two diameters cross.
- η (bold capital) at the bottom, below the circle, at the foot of the vertical line.
- A short horizontal line high inside the circle carries a run of small labels. Left to right: ζ , then line-work which may or may not be a further letter [?], then ϵ ; then ϵ on the vertical axis; then η , then a glyph resembling a β or β which I cannot resolve [?], then ι .
- λ (small capital) just below the ζ/ϵ cluster on the left; μ (small capital) just below the η/ι cluster on the right.
- Fans of straight lines converge on β from the labelled points on the upper part of the figure, and likewise on γ ; further lines join β to γ , β to A, and γ to A.
- Note: the figure shows no arc distinguishable as a drawn parabola at this resolution, and it carries the letters A, ζ , ϵ , η , ι , which the lemma's text never names; conversely the lemma names the parabola BLEMC whose letters λ , ϵ , μ are all present.

CLAVVS.

There is no way anyone could bear with an even mind that impudence of yours, by which the little book of Archimedes on the quadrature

of the parabola — a book all learned men rightly look up to — you dare to attack. Let us see, then, how splendidly you demonstrate that the parabola BLEMC is less than four thirds [sesquitertia] of the triangle BEC.

First, then, without any demonstration you assume that the parabola is enclosed within the triangle KBC. That this is false I show from Apollonius as follows. Since DE and EA are equal by your own construction, [Margin: a 33. primi Apollon.] the straight lines AB, AC touch the parabola at B and at C. [Margin: b 32. primi Apoll.] Therefore the straight lines BK, CK will cut the parabola, and consequently the parabola will not be enclosed within the triangle KBC.

Next, from GE and IE you cut off the third parts GF, IH; and with the straight lines FB, HC drawn you rightly demonstrate that the trapezium FBCH is four thirds of

the triangle EBC. For the triangle EBD is double the triangle BEG. Of such parts, therefore, as the triangle EBD is 6, the triangle BEG will be 3; but BFG is 1 and BEF is 2. Therefore, of such parts as EBD is 6, the trapezium FBCH is 8. And of such parts as EBC is 12, FBCH is 16; and so the trapezium FBCH is four thirds of the triangle EBC.

But when you afterwards go on to infer that the parabola is less than the trapezium FBCH, you go astray by the whole breadth of heaven — because you suppose the parabola to be described inside the trapezium. And that is not true, since the straight lines FB, HC cut the parabola, whether the points F, H lie between α E and β E, as in my figure, or between α G and β I, as in your own figure. Here too you beg the question, assuming without demonstration that the point F always falls between G and α — which in any case does not bear on the matter. And so you prove in no way whatever that the parabola is less than four thirds of the triangle. From this it follows — since Archimedes has truly demonstrated that the parabola is four thirds of the triangle, however much you bark against it — that the parabola is equal to the trapezium FBCH, provided the figure is correctly constructed. Learn the elements of conics first, then, before you set about censuring Archimedes.

SCALIGER, in scholio eiusdem propos. 19.

THEREFORE either not all parabolas, or none at all, have a sesquitertian ratio to the triangle having the same base and the same height as the parabola itself. Yet Archimedes, in the book [Greek: περί τετραγωνισμὸ παραβολῆς (peri tetragōnismou parabolēs, "On the quadrature of the parabola"; the print uses the πε- and πα- ligature sorts and the ὀ (ou) sort)] demonstrates that every parabola is four thirds of the triangle inscribed in it — a demonstration which he fortified with many mechanical epicheiremata. It is truly astonishing that so distinguished a work should be attacked by this one proposition of mine, and I do not see how I am to defend so great a man as Archimedes. Indeed even the parabola that Archimedes himself uses can be attacked in the same way — at which I cannot wonder enough.

CLAVIVS.

Every parabola is four thirds of the triangle inscribed in it, as Archimedes splendidly demonstrated. And it is indeed astonishing that you should have wished to attack the truth with your paralogisms. But what wonder that you do not see how to defend Archimedes, when you do not even understand him? And indeed every parabola can be attacked in the same sophistical way of yours.

SCALIGER in eodem scholio.

If we call in not geometry but our eyes for counsel, who does not see at first glance, with no demonstration going before, that the figure BLEB is less than a third part of the triangle BED? And so that no doubt might be left about the figure of the parabola BLEMC, be assured that we shaped that parabola to the section of a material cone as closely as could be done.

CLAVIVS.

What a splendid pseudo-geometer, fit to be banished to the ends of the earth, who puts more trust in his eyes and in a material parabola than in Archimedes' most subtle demonstrations! Yet you yourself had warned, in your prolegomena, that the compasses are not to be trusted unless demonstration goes with them. How, then, do you say contradictory things? In precisely the same way, in the Prolegomena of the *Cylometrica* [thus printed] and in the Appendix, you call your eyes into counsel, and a material circle rolled along a straight line, in order to persuade us that the circumference of a circle has to the diameter a ratio greater than $3\frac{1}{7}$ — passing over Archimedes' most acute demonstration, which proves the contrary, so that on that account you are not to be listened to. Let Archimedes, then, triumph with his demonstrations, and let Scaliger with his paralogisms vanish utterly and come to nothing.

I will say nothing here of his *Mesolabium*, which likewise swarms with countless errors. Only I cannot pass over in silence his childish blunder in proposition 6, where he teaches that proposition 35 of Book 9 of Euclid can be converted, without any demonstration at all. He could have recognized that error with no trouble in these numbers:

| | | | | | | | | |
|----|----|-----|-----|-----|----|-----|-----|------|
| 2. | 5. | 11. | 29. | vel | 4. | 12. | 50. | 136. |
| | 3. | | 27. | | | 8. | | 132. |

For when the first number is taken away from the second and from the last, the ratio of the remainder of the second to the first is the same as the ratio of the remainder of the last to all the antecedents — and yet the four numbers set down are not proportional. Where, then, is Scaliger's acumen, who failed to notice a thing so obvious?

I have set out, candid Reader, so far as it lay in me, some specimen of Scaliger's learning — or, if you prefer, of his ignorance — in geometry: more briefly, perhaps, and more temperately than either his innumerable outrages demanded or the man's shameless insolence might have seemed to wring from one unwilling. (For he has galled with every abuse and slander in his power, and with

some not in his power, a calendar that I was enjoying in quiet peace and that had been received, on the authority of the supreme Pontiff Gregory, by all who think rightly of the Christian religion; and though I was importunately provoked and long resisted, I had nevertheless to take up arms for the Catholic cause and to descend to a kind of writing previously hateful and unknown to me.) But something had to be granted to my years and to my temperament. There is this further reason too: to be willing to review and enumerate every single one of the errors bound up in that whole paralogistic little book of the man's would have been the work of no one man and of no one lifetime. For he has picked out nearly every one of his propositions with paralogisms — and thick, heavy ones at that — as one sets rings with gems.

But you, my Scaliger, unlearn your trifling at last; strip off that insane rashness of yours. Learn that there are some men whom you cannot deceive, who see clean through you and your work, and who have long known how to tell the false from the true. Acknowledge in how many matters, and in how foul a fashion, you slip; and, grown wiser now that your years are sinking toward their close, lay down the name of mathematician, a burden unequal to your strength. Get used at last to respecting other men, and to not setting yourself so far above everyone that you mock and despise them as though they stood beneath you. And have this last word from me. A man redeemed, as the poet says, by no virtue from his vices we can nevertheless love; we can refrain from hating you for being wicked, though that would not be very hard for us. But a man who barks at good and honoured men, who provokes the peaceable; a liar and a false mathematician, unclean and impious — him neither men will endure, nor God, against whom you are storing up wrath for yourself, vast wrath.

AD LECTOREM.

It has been our great care, kind Reader, that this edition should come out as correct as possible; and so we judged it better to warn you, even in a place not its own, of two errata which we noticed too late in the Geometria practica, than to neglect them altogether. The one is at page 187, line 60, where for* maius recta CD read maius semisse rectæ CD*. The other is at page 221, where for the cube of the root 138 (2628072.) read 2628027.**

FINIS.

[Divisional title page — global p. 847; unnumbered]

CONFVTATIO CALENDARI GEORGI GERMAN-NI WARTE
NBER-GENSIS BORVSSI,

Auctore

CHRISTOPHORO CLAVIO BAMBER-GENSIS SOCIETATIS IESV.

**Refutation of the Calendar of Georg Germann of Wartenberg in Prussia. By
Christoph Clavius of Bamberg, of the Society of Jesus.**

The leaf carries no imprint, place, or date, and no page number; the verso is blank apart from show-through from the following leaf.

[Global p. 848 — printed page 2]

IN

CALENDARIVM TRIPLEX GEORGI GER-MANNIANIM ADV
ERSIO CHRISTO-PHORICLAVII Bambergensis è Societa-te IESV.

AD

AD GEORGIVM GERMANNVMM VVARTENBERGENSEMBORVSS
VM.

**Christoph Clavius of Bamberg, of the Society of Jesus, on the *Threefold
Calendar* of Georg Germann. To Georg Germann of Wartenberg in Prussia.**

Scarcely had I taken delivery, this year 1609, of my reply to Scaliger's abuse and
slanders against the Gregorian calendar, printed at Mainz, when — behold —
there was brought to me from Germany your own new reform of the calendar,
Germann, whose title runs as follows.

Computus Ecclesiasticus **S I V E CALENDARIVM TRIPLEX.**

Gregorianum, Antiquum, & Nouum, cum nouo cyclo Lunari, &
refutatione quorundam insignium errorum Christophori Clauij
Bambergensis è Societate I E S V clarissimi nostri temporis Mathematici.

A V T H O R E

GEORGIO GERMANNO VVARTENBERGENSI BORVSSO.

[*Ecclesiastical Computus, or the Threefold Calendar* — Gregorian, Old, and
New — with a new lunar cycle, and a refutation of certain signal errors

of Christoph Clavius of Bamberg, of the Society of Jesus, the most distinguished mathematician of our time. By Georg Germann of Wartenberg in Prussia.]

In order to disparage me and my Calendar in complimentary language, Georg Germann, you hit on a new device — a doubtful artifice, to my mind. On the very title-page of your book, as though in the entrance hall, you address me far too indulgently as "the most distinguished mathematician of our time," while on the other side you advertise my signal errors. How well those two things fit together is for you to judge; to me they certainly look like a contradiction, since a man who could go so badly wrong in so commonplace a matter did not deserve to be counted a distinguished mathematician. But you reckoned, I suppose, that poison lies more safely hidden in sweet honey — and, as people do with children to make them swallow a bitter medicine, you coated the rim of the cup, so to speak, with the sweet nectar of a praise I never sought and long ago refused. You ought to have realized that deceiving an old man would prove as hard as unravelling your stratagems was easy; you had not put them together well.

Still, if you acted honestly and, as the phrase goes, in the good old way, I commend your candour — but I find the judgement wanting, and let that be said without offence. It would have been wiser and more agreeable if you had said nothing about praises of me which I do not claim for myself, and had proceeded instead by reasons and solid arguments, as you had implied on the book's very title-page that you would do. Where you have made that good is not at all clear. Perhaps the things you were turning over in your mind, and thought you could prove, looked easier at the outset; but the pen proved less obedient to your will than you expected, and refused to set down what the mind had not properly worked out. Even so, let the credit — however slight — of having *wanted* to do it be yours; and if the result did not answer the wish, put that down to the condition of human intelligence, which cannot hammer out just anything at its own pleasure.

One thing at least you should have weighed. Many men's talents have already been crushed, worn out by attacking the Calendar and racked to no purpose, and that has robbed everyone of any hope of victory; so doubtful and so heavy a task ought not to be attempted unless one's strength is matched to the difficulty of the thing. And — to confess frankly what is the fact — I have often asked myself what the reason can be why not a few mathematicians of our age, and not obscure ones, have poured all their industry and effort into this, when they might otherwise put their labour to use in so broad and open a field as this vast

discipline, and instead attack, besiege and try to demolish the Gregorian Calendar as though it were a hostile and dangerous citadel. As I turned this over, the following came into my mind: men of this kind resemble the man who wanted to win a notoriety made famous by the burning of Diana's temple and ennobled by sacrilege. Out of the very attack on the Calendar they are unjustly struggling to beg an inglorious glory, and to court a praise that merits none.

Good God! Now, an old man broken in years, I am dragged from one labour into another — not to fortify the Gregorian Calendar, but to

[Global p. 849 — printed page 3]

overturn, cunningly and maliciously, the engines that slander levels against it — engines struck off the press for that very purpose, while every day still others are freshly contrived, so that I myself, worn out at last by the same trifles and by matter full of tedium, may leave every man free to babble whatever he pleases: the aim being that the victory which cannot be had by reasons and by the justice of the case should be won through my silence and an improvident holding of my tongue. And they would in fact have obtained that from me easily enough, had I judged that what these men bring forward deserved any notice. But I saw that the dignity of so weighty a business would be diminished if I kept quiet without due thought, and refused to answer their frivolous sophisms and false inferences even in a couple of words, as the phrase goes. So I have never been willing to fail in my duty, nor did I think I ought to allow a freer field to be opened to their licence.

One thing at least I would not deny: of all who have so far broken in upon the Calendar, no one has written more expertly, or better, than you, Georg. That is why I came to have the highest hope that you would prove one of the keenest defenders of our Calendar, if you approached the weighing of my reasons candidly and sincerely — as you will. For it makes a great difference in what spirit a man writes, or reads another's work through. A turbid and muddy spring can neither receive an image nor return one; but let that same spring be clear and unclouded, and it will faithfully give back whatever you set before it.

As a friend, then, I give you the warning I always give: do not think more of yourself than is usual, and do not measure your opinions by the Lesbian rule, as they say, but by the unshakeable standard of mathematics. Apply that standard, and you will see more clearly than daylight that no errors whatever — let alone signal ones — have slipped from us in the Calendar. Things that necessity, not ignorance, brings with it are not to be called errors, nor are things which no

subtlety of intelligence could avoid. So, my good man, remember to be sparing in throwing such charges at men. Once words have slipped out they cannot be called back, and silence has very often helped even towards winning glory — the very glory you are too eager for, and lose the more shamefully by hounding other men's writings.

Nor should undertakings beyond one's strength and talent be attempted. A man who aims at posterity by publishing books should do what unfledged nestlings do, which have not yet tried the sky: they keep from flying and stay within the nest, conscious of their own weakness, until a stronger wing can carry their slight body through the air unharmed. Little by little and gradually — as the saying goes, imperceptibly — he ought first to entrust to the unkind and malicious light only such things as, even if they bring him back no abundant praise, will at any rate leave him with no mark of envy or stain of ignorance.

I believe you will not take it hard to be warned so kindly by an old man who for so many years has driven his chariot in this uncertain dust — since, as you yourself say, truth, still tiny and of an ill-favoured birth, may indeed give rise to hatred at first, but soon, grown stronger and sturdier by its native power, begets goodwill and love. And in truth, however much a sick man shrinks at first from the bitterness of the draught, once he has drunk it he soon loves it and is glad, so long as he hopes to carry off from that unlovely root an altogether delightful fruit.

But if you will listen to me, you will cultivate that talent of yours with a sterner discipline and a far stricter judgement. Shun the light for a time, and avoid the ambition of publishing, until whatever work you strike off — kept back even to the ninth year — can go safely through men's hands. That way you will have nothing to regret; and if you persevere you will reap the fruit both of your labours, which you would then not have spent at all badly, and of your talent. For, as I said not long ago, it is not talent I find lacking in your writings, but truth in the reasonings and judgement in the opinions — since you have written against me, without due thought, things you have neither proved nor will ever be able to prove, and have promised things that appear nowhere.

As for your saying at the end that you went down to so difficult a task on my advice, that you add out of your own head. Indeed, had you consulted me, you would [?] have come forward on the stage at the wrong moment, before you had long tuned up with yourself and the Muses, and had long and silently filed down a work that was to be laid before so many and such various human judgements. But now — I shall not deny it — I do come forward as your adviser, and the advice is a wholesome one: that you sing back what you have sung badly, and

show yourself teachable towards what I am about to say. Do not be ashamed to have learned something, even though you went wrong; for, as the man says, an athlete who has never been bruised cannot bring great spirit to the contest [Seneca, *De Providentia* 4]. The man who has shed his own blood, whose teeth have cracked under the fist; the man who, tripped, carried his opponent down with his whole body, and who, thrown down, did not throw away his courage; who as often as he fell rose up more skilled — that is the man who goes down to the fight with high hope.

I have added this last point so that you may understand that I am applying medicine and not poison, and bringing a cure and not a sword. Take in good part, then, and God love you for it, the things I say; for all ill intent is absent, and there will be no sting in my discourse that does not prick pleasantly, and goad you in kindness rather than in insult.

And to begin here: this Calendar of yours, Germann, is above all things faithless and inconstant — "wind and clouds," as the man says, "and no rain following" [Proverbs 25:14]. It promises much at the outset, and then performs nothing; and so that you may not complain that this is merely said by us in words and not shown in fact, here is how I prove it.

1. **PRIMO** — First, I do not see the new lunar cycle you boast of. Where, I ask, does it lie hidden in this whole Calendar? Into what recesses, pray, so deeply buried, has it withdrawn? Is it because you set up thirty golden numbers, some simple and some equated? But that is not to found a new lunar cycle; it is to throw the nineteen-year cycle [*cyclum decēnouennalem*] of golden numbers into remarkable confusion, and to muddle it with certain numbers inserted among them. For throughout all antiquity, even before the coming of Christ our Lord, the lunar cycle has always contained nineteen years and no more, as I have shown abundantly both in the *Apologia* against Maestlin and in the *Explicatio* of the Calendar. But of this ill-ordered constitution of the golden numbers, and of their number, I shall speak a little later. For it is not to be admitted in the Church that thirty golden numbers be introduced: fictitious and unheard-of as they are, they drag many errors after them, as will be plain in its own place.
2. **DEINDE** — Next, I do not acknowledge those signal errors of mine which you boast of having refuted; and I shall show this in its own place. But let us first wash away everything you said thoughtlessly against the Gregorian Calendar in your dedicatory Epistle. You assert, first of all, that astronomers complain bitterly that the Gregorian Calendar is neither

correct nor preserves the ancient rites of the Orthodox Church — because, that is, in it neither the apparent nor the mean equinox, nor even that fictitious one which the reformers of the Calendar devised, stays fixed on 21 March. But who, I ask, are these astronomers? Men like yourself, certainly, who think they know more than everyone else.

3. **ADDIS** — You add that these same astronomers complain that the epacts of the Calendar have been fitted to the celestial reckoning in such a way that not seldom the moon which on their showing is *xiiij* is, by the first reckoning, *xiiij*. From which it follows that we often celebrate the holy Pasch in the last month of the Hebrews, and often too on the moon's *xiiij* day.
4. **DENIQUE** — Lastly, you say that those astronomers take it ill that the reformers of the Calendar [set up] a certain new and troublesome cycle of epacts, one that leaps from year to year through discontinuous intervals of numbers,

[Global p. 850 — printed page 4]

which the Church has never used before, whereas the ancient golden number — provided the equation is applied to it — could do the same as the epacts, and by an easier method at that.

5. **HÆ** — These are the very grave complaints which those astronomers bring against the Gregorian Calendar out of your own mouth; and the following will show you that they carry no weight whatever. The first is pure slander. The Gregorian Calendar is entirely correct and preserves all the ancient rites of the Catholic Church, as I have demonstrated at length both in the *Apologia* against Maestlin and in the *Explicatio* of the Gregorian Calendar. As for what you add — that the equinox which the reformers of the Calendar devised, neither apparent nor mean nor fictitious, does not stay fixed on 21 March — you appear not to have read chapter 5 of the *Explicatio* of the Calendar, or cap. 5. lib. 1. of the *Apologia* against Maestlin. There I teach at length that the reformers were speaking neither of the true nor of the mean astronomical equinox, nor of any fictitious one, but of the equinox of the Alphonsine year, which is midway between the longest and the shortest year, and in accordance with which the four-hundred-year equation of the equinox was established — since, as all astronomers teach, it runs ahead by one day in 134 years and by three days in 402. Nor were they much troubled about the true equinox, which

advances unevenly, now retreating from 21 March towards the end of the month, now approaching that day again towards the beginning of the month; your own calculation in chapter 7 makes that perfectly plain. And the Church is certainly not bound to the irregular motion of the equinox, for that would stir up endless disagreement among the faithful. Please read the chapter 5 I mentioned above, and you will easily see that in your Calendar you throw the true equinox in our faces, to the point of nausea, for nothing.

6. **AD** — To the second complaint I have replied in many places in the *Explicatio* of the Calendar [printed *Celendarij*]. Namely: because of the imperfection of the cycle — whatever cycle it may be — it does sometimes happen (though very rarely indeed in the Gregorian Calendar) that Easter is celebrated in the Hebrews' last month, or even on the moon's *xiiij*. That happens in your Calendar too; and what is more absurd, in it you very often celebrate Easter in the second month or in the last, and indeed outside the limits which the Fathers prescribed for us.
7. **TERTIA** — The third complaint fits your Calendar better than ours. Your equated golden numbers leap about with no order at all, more freely than you would wish, and are held by no fixed laws, as I shall set out more clearly in its own place. The cycle of epacts, by contrast, is not new, and it is not true that the Church has never used it before. Have not country people, sailors, and the untaught crowd always tracked the moon's age by epacts? Is not the finding of the epact and its use taught in all the Church's books, in the breviaries and missals? What could be devised that is better suited to exploring the mean new and full moons than the cycle of epacts? For the epacts are the number of days that remain over in December after the year's last lunation, as I explained in chapter 9 of the *Explicatio* of the Calendar. Nor do they leap from year to year without order, as you jeer: they always advance by 11, except when the golden number is 19 — then 12 is added to the epact to form the following year's epact, as I said in chapter 10 of the *Explicatio* of the Calendar.
8. **IN** — Later, in the same dedicatory Epistle, you sing a triumph over me on the ground that in the *Apologia* against Maestlin I said what all but contradicts itself: on page 296 I boast splendidly that all errors have been avoided in the Gregorian Calendar, and then on page 322 I assert that in no calendar can all errors be avoided. But listen, my good man. In the earlier passage I do not mean that absolutely every error has been avoided — that

cannot be done, since some cannot be avoided and for that very reason are not to be called errors without qualification — but that of these same errors far fewer, and smaller ones, are found in our Calendar than in the old one. That, in fact, is how you will find I put it on page 299:

[Margin: » guillemets set against the four lines of the quotation below]

As for the third error — that Easter should not follow moon xxj, that is, should not fall in the fourth week of the lunar month — if it is to be called an error at all (since it can be avoided in no cycle), we frankly admit that, by Canon. 2. of the new Calendar, on account of the necessary postponement it does sometimes happen that Easter falls at the beginning of the fourth week, that is, on moon xxiij, or on the moon's later quadrate aspect.

What objection, then, do you have at this point? None whatever, since in that very place I explained plainly that there must necessarily be some errors which cannot be avoided because of the imperfection of the cycle. Wait a little, until in what follows you see how many errors you yourself run into unawares on account of your equated golden number and your equation of the true equinox.

9. **AD** — Finally, in the same Epistle you give the reason why you wrote this Calendar of yours: because, that is, I urged Maestlin to venture something of the kind, and so you boast of having brought successfully to completion what he himself could not do. But here, Germann, I have a thing or two to enquire of you rather more closely. First: if you are a Catholic, as you profess to be — though one might have one's suspicions about that, since you submitted your Calendar to the judgement and censure of David Origanus [David Origanus], a heretic, when you know perfectly well that heretics will approve any writing whatever published against the Roman Church — what possessed you, after the Bull of Gregory XIII, which commands everyone to use the new Gregorian Calendar, to dare to force your new one upon us? Especially since Clement VIII in his Bull forbids all other Calendars that may be set up by your side hereafter. My own exhortation, by which I invited Maestlin to do the same, cannot defend you: since he is a heretic, I knew well that he sets little store by the authority of the Catholic Church, and would therefore dare to contrive another Calendar at his own discretion, even against the Pope's command, because he does not fear the Pope's threats or penalties. No one ought to persuade himself of that where a Catholic is concerned.

Next, you have not delivered what you promised, or what I urged upon Maestlin. Your Calendar does not employ the civil year and the cycles the Church uses; it sets before us instead the true motion of the equinox, and a cycle of the golden number remarkably disturbed and confused, as I shall say in its own place. Nor does it prescribe easy and perpetual rules suited to the ordinary person's grasp. Lastly, if you had something that displeased you in the Gregorian Calendar, why did you not put it forward before the Calendar was published, at the time when Stephen, King of Poland [Stephen Báthory], had the *Compendium* of the Calendar — sent by Gregory XIII to the Princes — examined by his own mathematicians, and approved it? At that point everyone was still free to set out his own opinion. But now this diligence of yours in patching together a new Calendar comes far too late. For even if it were correct in every particular, as you falsely proclaim, it would still not have to be accepted, since the Gregorian Calendar has already been received everywhere by the Catholic Church, and appro[ved]...

[Global p. 851 — printed page 5]

approved — especially since the Gregorian Calendar is better fitted to the common and popular understanding than yours is. And let this stand as my answer to the objections you bring against the Gregorian Calendar in your dedicatory Epistle.

10. **IAM** — Now, so far as your Calendar itself is concerned, I do not deny that many things in it have been discovered and thought out with ingenuity and acuteness; but not all of them belong to the plan of an ecclesiastical Calendar, which ought to be popular and suited to the ordinary person's grasp — indeed most of them run against it. First: who could tolerate with an even mind the insertion of those 11. numbers between pairs of golden numbers that are not adjacent? Since they are neither golden numbers nor epacts, on what authority, or on what precedent, are they thrust in there? The device is downright new and unheard-of, and contrived without any necessity, since without it the new moons are found far more easily by the epacts, as I said above at Num. 7 and taught in the *Explicatio* of the Calendar, and as I shall set out more plainly when we come to your equation of the golden numbers. For the present, take it thus: your equated golden numbers are altogether like a chimera, since they have been put together at random, and were certainly not rightly devised by you. Add that some of them make a single lunation of 31. days, indeed sometimes of 32. days. What could be called more monstrous or more absurd than that? But of this below.

11. **QVIS** — Who, again, would not be angry with you for rejecting, in your chapter 4, the equation of the equinox which advances over four hundred years and is framed for the mean year, and for embracing instead the equation drawn according to the true motion, which is highly uneven and irregular? Did we not expressly teach, in the *Compendium* of the Calendar sent to the Christian Princes in the year 1577., how that ought to be done if it were expedient? What, I ask you, came into your mind at that time? Is it not folly to want to tie the Church to the true motions and to force the faithful to compute the true equinox? Who will settle the disagreement that will necessarily arise among them, when one man contends that these tables are to be followed and another that those are? The Prutenic Tables [*tabulæ Prutenicæ*] certainly throw the true equinox on one day, the Alphonsine Tables [*tabulæ Alphonsinæ*] on another, and the Tychonic calculation [*calculus Tychonicus*] on another. For example, in the year of the Lord 43103. — a year so far distant that you chose it with the greatest care, in order to trump up a charge against our Calendar — the spring equinox by the Prutenic Tables will fall about 8. days after 21 March; by the Alphonsine, only about 4. days after; whereas the Tychonic calculation shows it about 8. days before 21 March. Which of these, then, is the Catholic Church to follow? The same can be seen in other years. Indeed I have computed the equinox for a great many years, both from the Prutenic and from the Alphonsine tables: for the year 9103., for instance, the Prutenic Tables give the equinox on 27. March, whereas the Alphonsine draw it back to the 24.

Change your opinion, I beg you, if you have any sense, and accept with us the stable and uniform equation of 400. years, which I discussed at length in the *Explicatio* of the Calendar, cap. 5. 6. & 7. — and especially because, as you yourself testify at your chapter 10, the Church disregards the true conjunctions of the luminaries and uses the mean ones. What is more, François Viète [François Viète], a most learned man, and Joseph Scaliger, who attacked the Gregorian Calendar most fiercely, did not dare to censure this equation of the equinox of ours advancing over 400. years; they accepted it of their own accord as probable. And if it should sometimes happen that Easter is celebrated before the true equinox, that is not absurd, as I explained in the *Explicatio* of the Calendar, cap. 5. Num. 12. In the same chapter, at Num. 14., I taught how the equinox is to be restored to the twenty-first day of March, should it happen to withdraw too far from that day with no hope of returning to it; and I repeated this again at cap. 7. Num. 5.

On this showing all your objections and outcries collapse — the ones with which you reproach the Gregorian Calendar for not always keeping Easter after the equinox. Acknowledge your own fault too: you did not carry out the advice I gave Maestlin, since you do not propose rules that are easy and popular, as would be right, and that have always been in use in the Church. As for what you call my slips over the equinoxes in 22. years, which I computed in the *Explicatio* of the Calendar, cap. 7., and which you noted in cap. 7. of your own Calendar — anyone will easily see that they are of no importance, if he carefully compares my equinoxes with yours. He will find only a small difference between them, since yours are reckoned after midnight, whereas mine are referred to a time about noon, or midnight, or at any rate about sunset, without account being taken of hours. For instance, in the year 3156. I put the equinox on 20. March about sunset, which you put on the 20. at hour 21. after midnight: what difference, I ask, is there between the two? Practically none. So too in the year 1653. I set the equinox on the 20. after midnight, which you place on the 21. at hour 0. after midnight. Again, in the year 15804. the equinox was found by me on the 23. about midnight, which you put on the 23. at hour 22. after midnight — that is, only two hours before the midnight which we reckon after the noon of the 23. And so with the rest. And so you are looking for a knot in a bulrush, as the saying goes, and seem to want nothing but to slander.

Besides, I was not the only one to calculate those equinoxes: other practised men calculated them along with me, so that there can be no doubt about them. And no one will deny that in the year 20005. the equinox has not yet withdrawn from the 21., since it falls on the 20. after midnight — which your calculation places on the 21. at hour 5. after midnight, that is, after the midnight which follows the 20. — although in some lesser years, and especially in the year 9103. which you adduce, it is found some days beyond the 21. But this does not obstruct the equation of the Gregorian Calendar, since in the following years it returns of its own accord to the 21. again. What deserves blame in this business is the inconstancy and uncertainty of the tables, which forced me to assert that before the year 20005. the spring equinox could never fall beyond 23. March, seeing that at that point it still sticks about the 21. And who would have believed that in some lesser years it would slip beyond the 23. and the 24. and further still, and then approach the 21. again, unless calculation showed it? Anyone could have been led by a conjecture probable enough to suppose that it could not withdraw so far from the 21. before the year 20005. That this happened to me too, through want of foresight, I frankly admit — and the reason is that I had not computed the equinoxes of all the preceding years.

12. **QVOD** — Next you charge me with having said that the mean equinox precedes or follows by just as much time as is enough for the Sun, on its true motion, to run through the arc of the equation of the precession of the equinoxes. See that it is not you who are deceived. For I have on my side Erasmus Reinhold [Erasmus Reinhold] and Giuseppe Moletti [Giuseppe Moletti], along with other learned astronomers. The arguments by which you attack that position carry no weight whatever, and neither does your solution of my objection — which I leave to the kind Reader's judgement. For otherwise the true and the mean equinox would occur at one and the same moment whenever the prosthaphæresis of the equinoxes [*prosthaphæresis æquinoc[t]iorum*] is nil, which is contrary to all astronomers. On much the same footing you are wrong to censure me for having written that the Sun's equation never [amounts to] two

[Global p. 852 — printed page 6]

degrees. Look at the Prutenic Tables somewhat more attentively, I beg you; and if you ever catch the equation of the orb [*æquatio orbis*] amounting to two degrees, I shall gladly yield the point. But you will never find this — even though the equation of the orb, corrected by the proportional part, may sometimes exceed two degrees. That makes nothing against us, since we were speaking of the Sun's equation as it is found in the table; just as the greatest equation of the precession of the equinoxes is likewise set down in those same tables as Grad. 1. Min. 10. Sec. 22. Ter. 30., whatever may be the case about the correction of it.

13. **DENIQUE** — Lastly, as to your thinking that I go wrong when I teach that the new moons run ahead of their seats in the Calendar by one day once 312½ years are completed, and not when 304. years have elapsed: it is you yourself, and splendidly, who go wrong, not I — as I proved at length only recently in the *Responsio* to the abuse and slanders of Joseph Scaliger against the Gregorian Calendar, printed at Mainz, from page 13. through to page 22. For if the lunar month comprises 29. days 12. hours 44. minutes 3. seconds 10. thirds 48. fourths, as the Prutenic Tables will have it, then 235. lunar months will make up 6939. days 16. hours 32. minutes 27. seconds 18. thirds 0. fourths. Since therefore 19. solar years consist of 6939. days 18. hours, the 235. lunar months will fall short of the 19. solar years by 1. hour 27. minutes 32. seconds 42. thirds. And by that interval of time the Moon anticipates her seats in 19. years.

At this point, too, I do not know what came into your mind, that you should say that in other Julian years — those which do not arise by an increment of 76. years

— the anticipation of the new moons cannot be noted, even though the same golden number is running; whereas I have in fact noted the anticipation here within 19. years. Hence, when the calculation is properly carried through, in 312½ years the Moon will run ahead of her seats by 23. hours 59. minutes 53. seconds 5. thirds, which fall short of a whole day by only 0. hours 0. minutes 6. seconds 55. thirds [printed Tert.].

POSITA — Assume the same magnitude of the lunar month, 29. days 12. hours 44. minutes 3. seconds 10. thirds 48. fourths, according to the same Prutenic Tables, and work the same calculation through: you will find that in 304. years the Moon anticipates her seats by only 23. hours 20. minutes 43. seconds 12. thirds, which fall short of a whole day — that is, of 24. hours — by 0. hours 39. minutes 16. seconds 48. thirds; and for these too to be anticipated, a further 8. years and more are required. Do you not see, Germann, that the Moon anticipates one day more truly in 312½ years than in 304.? Read, I beg you, the reply of mine mentioned above. There you will also learn the reason why Hipparchus [Hipparchus], whom the crowd of computists follows, asserted that the anticipation of one day takes place in 304. years. You will come to know, further, that the new moons cannot anticipate one day in 304. years unless you suppose them to anticipate 1½ hours within a single nineteen-year period [enneadecateride] — which we said above is false.

ATQVE — And with this I believe I have answered those signal errors which you have fastened upon me: I have shown that there are none. As for the 35. Paschal full moons you list in your chapter 8 running somewhat ahead of the true equinox, that is not to be reckoned an error, since the Church does not observe the true equinox: it is enough that those full moons follow 21 March, the day assigned to the equinox. And that the Paschal full moons run ahead of the moons xiiij which you enumerate in chapter 9, more than is fair, comes from the imperfection of the cycle — a defect which the Dominical letter usually compensates for, as I said in the *Explicatio* of the Calendar.

14. **SED** — But let us now examine the doctrine in that new Calendar of yours, so that everyone may understand that it is not free of every blemish, as you proclaim. To begin with, I ask you what that device is, before chapter 7, in the investigation of the day of the equinox — the marking of the hour-numbers with a little stroke. Does this not give printers occasion for countless errors, since they can easily omit some stroke, or add one where it is not needed? The device really looks childish to me. You ought to have handed down a rule by which one could tell to which numbers the stroke is

to be attached and to which not, so that anyone might correct the mistakes, should any happen to have been made by the printer; and that you did not do. Weigh the tables of our Calendar carefully, and you will always find the principle on which they are constructed. Add that those strokes teach contradictory things, so much so that by them the same equinox is found, in some years, to fall on two different days, if your own precept is observed. To bring forward one example out of countless: in the year 1900. the equinox is marked in your Calendar on the 20. at hour 22. of March. But if we take the year 1800. with 100. in the side column, so as to make 1900., the same equinox will come out on the 19. at hour 22. — because, since the stroke is marked at hour 22., the day one unit less must be taken, as you direct. Do you see how badly that table and your own precept agree with each other? Why did you not notice so glaring a contradiction? I should be ashamed if anything of the sort were found in my rules.

15. **EODEM** — Your rule in chapter 15 for finding the equated golden number labours under much the same fault. Since you attach a point to certain of the equation numbers — so that the equated golden number is then taken as xiiij for 14 — who does not see that this is exposed to a thousand dangers, seeing that the point can easily be left out, or added where there is no need? Why did you not teach to which numbers the point of equation is to be attached and to which not, so that a diligent Reader could mark the mistakes which may perhaps have crept in here through the printer's negligence? For such carelessness you can certainly have no excuse.

But tell us, Germann, why that equated golden number of yours pleases you so greatly. It certainly does not satisfy me, since it is neither a golden number nor an epact, but a number inserted among the Calendar's golden numbers by chance and not by art — even though you generate it by adding another number to the golden number. Why, on the same principle, cannot the epacts of the Gregorian Calendar be called equated golden numbers? For just as your equated numbers are made up out of the ordinary golden numbers with certain numbers added, so too the epacts are put together out of those same ordinary golden numbers with certain other numbers added, as I taught in the ecclesiastical Computus. And indeed the epacts are put together in that way far more easily than your equated golden numbers, since you have not been able to prescribe any fixed rule for what number of equation ought to be taken in this or that hundredth year [printed *velillo*]. And this, perhaps, was the reason why you did not go on beyond the year 4900.

Again, the epacts advance in the Calendar in their natural series, whereas your equated golden numbers leap very disorderedly through the days of the months. And among its other absurdities, your equated golden number *xiiij* badly upsets the harmony of the new moons in March. For in the years in which you teach that the golden number *xiiij* assigned to 8. March is to be taken, the lunation beginning on 5. February, which ends on 7. March, contains 31. days — and in leap years 32. days; whereas the lunation whose beginning is on 8. March and whose end is 4. April takes in only 28. days. All of this is repugnant to the nature of the months, since no [month can contain...]

must contain more than 30. days, nor fewer than 29. — apart from certain lunations that begin in February and end in March, which necessarily consist of 31. days in leap years because of the intercalary day. But never 32., as happens in your Calendar. You see, then, how badly things go with your equated golden numbers, since they give birth to so great an absurdity and to such monstrosities.

But if I guess rightly, I see that you assigned that golden number *xiiij*. to the eighth day of March for this reason alone: so that not all the Easters of the equated golden number 14. should fall in April, but that some of them should be celebrated in March. Yet in this very matter you very often exhibit the Paschal full moons, contrary to the Decrees of the Fathers, in the last month — that is, before the 21. of March that is assigned to the equinox — as is clear in the following table.

Table (printed p. 7). Column-group headings as printed: the first group *Anni Domini.* | *Aur. numeri.* | *Epactæ.* | *Plenil.Pasch.Cal. Gregoriani.* (subdivided *D. H. M.* | *Mēf.*); the second group *Aureus numer. æquat. Germā.* | *Plenil.Pasch.Cal. Germani.* (subdivided *D. H. M.* | *Mēf.*).

| Anni Domini.
[Years of the
Lord] | Aur. numeri.
[Golden
number] | Epactæ.
[Epacts] | Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number] | | | |
|--|------------------------------------|---------------------|--|---|------|----------|
| | | | D | H | Mēf | M |
| | | | . | . | . | . |
| 1845. | 3 | xxij. | 2 | 1 | 3 M | 2 1 3 M |
| | | | 2 | 9 | 2 ar | 0 9 2 ar |
| | | | . | . | . | . |

| Anni Domini.
[Years of the
Lord] | Aur. numeri.
[Golden
number] | Epactæ.
[Epacts] | M
D H Mēf
. . . . | Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number] | M
D H Mēf
. . . . |
|--|------------------------------------|---------------------|--------------------------------|--|--------------------------------|
| 1864. | 3 | xxij. | 2 1 1 M
2 2 0 ar
. . . . | xiiij. | 2 1 1 M
0 2 0 ar
. . . . |
| 3220. | 1 | xxiiij. | 1 9 3 A
9 . 0 p
. . . r. | xiiij. | 2 2 2 M
0 0 6 ar
. . . . |
| 3249. | 1 | xxiiij | 1 2 1 A
9 . . p
. . . r. | xiiij. | 2 1 1 M
0 3 7 ar
. . . . |
| 3268. | 1 | xxiiij | 1 1 3 A
8 8 3 p
. . . r. | xiiij. | 2 1 4 M
0 5 9 ar
. . . . |
| 3287 | 1 | xxiiij | 1 1 6 A
9 1 . p
. . . r. | xiiij. | 2 2 2 M
0 2 2 ar
. . . . |
| 3344. | 1 | xxiiij | 1 1 4 A
9 2 3 p
. . . r. | xiiij. | 1 2 5 M
9 3 9 ar
. . . . |
| 3534. | 1 | xxij | 2 2 2 M
2 1 4 ar
. . . . | xiiij. | 2 2 2 M
0 1 4 ar
. . . . |
| 3553. | 1 | xxij | 2 1 5 M
2 3 6 ar
. . . . | xiiij. | 2 1 5 M
0 3 6 ar
. . . . |
| 3572. | 1 | xxij | 2 6 2 M
2 . 8 ar
. . . . | xiiij. | 2 6 2 M
0 . 8 ar
. . . . |
| 3610. | 1 | xxij. | 2 1 3 M
2 5 3 ar | xiiij. | 2 1 3 M
0 5 3 ar |

| Anni Domini.
[Years of the
Lord] | Aur. numeri.
[Golden
number] | Epactæ.
[Epacts] | M
D H Mēf
. . . . | Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number] | M
D H Mēf
. . . . |
|--|------------------------------------|---------------------|--------------------------------|--|--------------------------------|
| 3629. | 1 | xxiiij. |
2 6 3 M
2 . 8 ar | xiiiij. |
2 6 3 M
0 . 8 ar |
| 3648. | 1 | xxiiij. |
2 0 3 M
2 . 8 ar | xiiiij. |
2 0 3 M
0 . 8 ar |
| 3667. | 1 | xxiiij. |
2 1 1 M
2 7 1 ar | xiiiij. |
2 1 1 M
0 7 1 ar |
| 3686. | 1 | xxiiij. |
2 9 4 M
2 . 3 ar | xiiiij. |
2 9 4 M
0 . 3 ar |
| 3800. | 1 | xxj. |
2 1 5 M
4 1 8 ar | xiiiij. |
2 1 5 M
0 2 8 ar |
| 3838. | 1 | xxj. |
2 2 3 M
3 2 . ar | xiiiij. |
2 2 3 M
0 2 . ar |
| 3857. | 1 | xxj. |
2 1 4 M
3 6 5 ar | xiiiij. |
2 1 4 M
0 6 5 ar |
| 3876. | 1 | xxj. |
2 7 8 M
3 . . ar | xiiiij. |
2 7 8 M
0 . . ar |
| 4813. | 7 | xxiiij. |
2 7 5 M
1 . 7 ar | xiiiij. |
2 7 5 M
0 . 7 ar |
| 4832. | 7 | xxiiij. |
2 0 3 M | xiiiij. |
2 0 3 M |

| Anni Domini.
[Years of the
Lord] | Aur. numeri.
[Golden
number] | Epactæ.
[Epacts] | M
D H Mēf
. . . . | Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number] | M
D H Mēf
. . . . |
|--|------------------------------------|---------------------|-------------------------|--|-------------------------|
| | | | 1 . 0 ar | | 0 . 0 ar |
| | | | | | |
| 4851. | 7 | xxij. | 2 1 2 M
1 7 . ar | xiiij. | 2 1 2 M
0 7 . ar |
| | | | | | |
| 4870. | 7 | xxij | 2 9 3 M
1 . 5 ar | xiiij. | 2 9 3 M
0 . 5 ar |
| | | | | | |
| 4889. | 7 | xxij. | 2 2 7 M
1 . . ar | xiiij. | 2 2 7 M
0 . . ar |
| | | | | | |
| 5022. | 7 | xxij | 2 2 5 M
2 1 4 ar | xiiij. | 2 2 5 M
0 1 4 ar |
| | | | | | |
| 5041. | 7 | xxij | 2 1 2 M
2 4 8 ar | xiiij. | 2 1 2 M
0 4 8 ar |
| | | | | | |
| 5060. | 7 | xxij | 2 6 5 M
2 . 9 ar | xiiij. | 2 6 5 M
0 . 9 ar |
| | | | | | |
| 5079. | 7 | xxij | 2 2 3 M
2 3 1 ar | xiiij. | 2 2 3 M
0 3 1 ar |
| | | | | | |
| 5098. | 7 | xxij | 2 1 4 M
2 6 . ar | xiiij. | 2 1 4 M
0 6 . ar |
| | | | | | |

VIDES — Do you not see that in all these years the Paschal full moons of the Gregorian Calendar belong to the first month, since they follow the 21. of March

assigned to the equinox, whereas in your Calendar they belong to the last month, since they come before that same 21. of March? You were wrong, then, to push the number *xiiij.*, marked with a different character, down by one day in March in place of the equated golden number 14. — since, by your own equation of the true equinox, all the full moons of the equated golden number 14. fall in April. And it is your equated golden number *xiiij.* that throws you into these errors.

SED — But look also at the following table, in which you commit further errors on account of that same equation of the true equinox of yours: for you exhibit the Paschal full moon either in the last month — that is, not after the ecclesiastical equinox, or after the 21. of March, as is proper — or else certainly in April, a whole month later, that is, than in the Gregorian Calendar.

Table (printed p. 8). Column-group headings as printed: *Anni Domini.* | *Aur. numeri.* | *Epactæ.* | *Plenil.Pasch.Cal. Gregoriani.* (subdivided *D. H. M.* | *Mēf.*); then *Aureus numer. æquat. Germā.* | *Plenil.Pasch.Cal. Germani.* (subdivided *D. H. M.* | *Menf.*).

| <i>Anni Domini.</i>
[Years of the
Lord] | <i>Aur. numeri.</i>
[Golden
number] | <i>Epactæ.</i>
[Epacts] | <i>M</i>
<i>D H Mēf</i>
.
.
.
. | <i>Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number]</i> | <i>M
e
D H Mnf</i>
.
.
.
. |
|---|---|----------------------------|--|--|--|
| 1712. | 3. | xxij | 2 2 5 M
1 2 0 ar
.
.
. | 3. | 2 2 5 M
0 2 0 ar
.
.
. |
| 1723. | 14. | xxij. | 2 3 4 M
1 . 1 ar
.
. | 14. | 1 1 2 A
8 6 5 p
.
. |
| 1788. | 3. | xxij | 2 1 0 M
1 8 . ar
.
. | 3. | 2 1 0 M
0 8 . ar
.
. |
| 1913. | 14. | xxij | 2 1 6 M
1 . . ar
. | 14. | 1 1 5 A
8 3 0 p
.
. |
| 1932. | 14. | xxij | 2 1 3 M | 14. | 1 6 2 A |

| Anni Domini.
[Years of the
Lord] | Aur. numeri.
[Golden
number] | Epactæ.
[Epacts] | M
D H Mēf
. . . . | Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number] | M
e
D H Mnf
. . . . |
|--|------------------------------------|---------------------|-------------------------|--|------------------------------|
| | | | 1 7 8 ar | | 8 . 2 p |
| | | | | | . . . r. |
| 1951. | 14. | xxij | 2 1 5 M | 14. | 1 2 3 A |
| | | | 2 0 1 ar | | 8 3 5 p |
| | | | | | . . . r. |
| 1970. | 14. | xxij | 2 3 2 M | 14. | 1 1 7 A |
| | | | 2 . 3 ar | | 8 6 . p |
| | | | | | . . . r. |
| 1989. | 14. | xxij | 2 1 1 M | 14. | 1 8 0 A |
| | | | 1 9 6 ar | | 8 . . p |
| | | | | | . . . r. |
| 2008. | 14. | xxij | 2 1 4 M | 14. | 1 0 3 A |
| | | | 1 1 8 ar | | 8 . 2 p |
| | | | | | . . . r. |
| 2027. | 14. | xxij | 2 4 2 M | 14. | 1 1 5 A |
| | | | 2 . 1 ar | | 8 7 . p |
| | | | | | . . . r. |
| 2046. | 14. | xxij | 2 2 5 M | 14. | 1 9 3 A |
| | | | 1 0 3 ar | | 8 . 7 p |
| | | | | | . . . r. |
| 3439. | 1 | xxiiij. | 2 1 4 M | 25. | 1 2 2 A |
| | | | 2 0 1 ar | | 8 3 5 p |
| | | | | | . . . r. |
| 3507. | 12. | xxiiij. | 2 1 1 M | xxv. | 1 4 5 A |
| | | | 1 6 0 ar | | 8 . 4 p |
| | | | | | . . . r. |
| 3526. | 12. | xxiiij. | 2 8 4 M | xxv. | 1 2 2 A |
| | | | 1 . 2 ar | | 7 1 6 p |
| | | | | | . . . r. |

| Anni Domini.
[Years of the
Lord] | Aur. numeri.
[Golden
number] | Epactæ.
[Epacts] | M
D H Mēf
. . . . | Aureus
numer.
æquat.
Germā.
[Germann's
equated
golden
number] | M
e
D H Mn f
. . . . |
|--|------------------------------------|---------------------|--------------------------------|--|--------------------------------|
| 3545. | 12. | xxiiij. | 2 1 1 M
1 . 5 ar
. . . . | xxv. | 1 1 5 A
7 3 9 p
. . . r. |
| 3583. | 12. | xxiiij. | 2 1 2 M
1 0 0 ar
. . . . | xxv. | 1 2 4 A
7 3 . p
. . r. |
| 4403. | 15. | xxiiij. | 2 1 4 M
1 6 5 ar
. . . . | 14. | 1 5 2 A
9 . 9 p
. . r. |
| 5155. | 7 | xxj. | 2 1 4 M
3 7 1 ar
. . . . | 14. | 1 6 2 A
9 . 5 p
. . r. |
| 5459. | 7 | xx | 2 1 2 M
4 9 0 ar
. . . . | 14. | 1 8 4 A
9 . . p
. r. |
| 5516. | 7 | xx | 2 1 5 M
4 9 8 ar
. . . . | 14. | 1 8 4 A
8 . 2 p
. . r. |
| 5611. | 7 | xx | 2 6 4 M
5 . 0 ar
. . . . | 14. | 1 1 2 A
9 9 4 p
. . . r. |

IN — In all these years, two excepted, your Paschal full moons not only fall in April though in the Gregorian Calendar they occur in March; four of them actually run out beyond the limit that the Fathers and the Councils prescribed for us, that is, past the 19. of April. And indeed in the year 4403., where your Dominical letter is D., you propose that Easter be celebrated on the 19. of April — before the mean full moon.

SED — But to come back to your equated golden numbers: let us look more deeply into their table in chapter cap.15. of your book [lib. tui], and weigh whether you constructed it by art and not rather by accident. To me, certainly, it does not appear to have been put together to the standard and rule of the lunations; on the contrary, it is wholly opposed to that rule.

Table (printed p. 8, lower). Two panels side by side, each headed *Dies mensis Martij.* | *Aur. num. æquati in Martio.*

| <i>Dies mensis Martij.</i> [Day of March] | <i>Aur. num. æquati in Martio.</i> [Equated golden number in March] | <i>Dies mensis Martij.</i> [Day of March] | <i>Aur. num. æquati in Martio.</i> [Equated golden number in March] |
|---|---|---|---|
| 1 | 20 | 17 | 24 |
| 2 | 9 | 18 | 13 |
| 3 | 28 | 19 | 2 |
| 4 | 17 | 20 | 21 |
| 5 | 6 | 21 | 10 |
| 6 | xxv. 25 | 22 | 29 |
| 7 | 14 | 23 | 18 |
| 8 | xiiij. 3 | 24 | 7 |
| 9 | 22 | 25 | 26 |
| 10 | 11 | 26 | 15 |
| 11 | 30 | 27 | 4 |
| 12 | 19 | 28 | 23 |
| 13 | 8 | 29 | 12 |
| 14 | 27 | 30 | 1 |
| 15 | 16 | 31 | 20 |
| 16 | 5 | | |

For since the new moons, on your own account, run one day ahead in 304. years, the Moon had to be equated every three-hundredth year — which you have by no means done. You equated it only in these years: 1800. 3100. 3400. 3800. 4700. 5000. 5300. — and of these, no one following exceeds the one immediately before it by 300. years. On the contrary, the year 3100. exceeds the year 1800. by 1300. years; the year 3800. exceeds the year 3400. by 400. years; and the year 4700.

goes beyond the year 3800. by 900. years. Indeed, what is still more astonishing, you have not even kept a consistent reckoning of the centesimal leap-[years]...

-[years]: and both of these failings are unworthy of a mathematician. But that the matter really stands so you will grasp plainly from the following table, once I have first taught you on what principle the Moon is to be equated every three-hundredth year, the centesimal leap years not being neglected — as I taught at greater length in the exposition of the Calendar.

1. **QVANDO** — When, therefore, the intercalary day is omitted in some centesimal year and the Moon does not need an equation, the new moons fall one day later.

2. **QVANDO** — But when in some centesimal year the intercalary day is not omitted, while the Moon does need an equation, the new moons rise by one day.

Table (printed p. 9). Headings as printed: Num. addendi fecundum Germannū. [numbers to be added according to Germann] | Vbi Germānus Lunam æquat. [where Germann equates the Moon] | Centefimi anni. [centesimal years] | Vbi fieri debeat æquatio Lunæ. [where the equation of the Moon ought to be made] | Numeri addendi fecundum nos. [numbers to be added according to us].

| Num. addendi
fecundum
Germannū. | Vbi Germānus
Lunam æquat. | Centefimi
anni. | Vbi fieri debeat
æquatio Lunæ. | Numeri
addendi
fecundum nos. |
|---------------------------------------|------------------------------|--------------------|-----------------------------------|------------------------------------|
| 11 | * | 1800. B | * | 11 |
| 0 | | 1900 | | 0 |
| 0 | | 2000. B. | | 0 |
| 19 | | 2100 | * | 0 |
| 19 | | 2200 | | 19 |
| 8 | | 2300 | | 8 |
| 27 | | 2400 | * | 8 |
| 27 | | 2500 | | 27 |
| 16 | | 2600 | | 16 |
| 5 | | 2700 | * | 16 |
| 5 | | 2800 | | 5 |
| 24 | | 2900 | | 24 |
| 13 | * | 3000 | * | 24 |

| Num. addendi
fecundum
Germannū. | Vbi Germānus
Lunam æquat. | Centefimi
anni. | Vbi fieri debeat
æquatio Lunæ. | Numeri
addendi
fecundum nos. |
|---------------------------------------|------------------------------|--------------------|-----------------------------------|------------------------------------|
| 24 | | 3100. B | | 24 |
| 13 | | 3200 | | 13 |
| 13 | * | 3300. B | * | 24 |
| 24 | | 3400. B | | 24 |
| 13 | | 3500 | | 13 |
| 13 | | 3600. B | * | 24 |
| 2 | | 3700 | | 13 |
| 13 | * | 3800. B | | 13 |
| 2 | | 3900 | * | 13 |
| 21 | | 4000 | | 2 |
| 21 | | 4100 | | 21 |
| 10 | | 4200 | * | 21 |
| 29 | | 4300 | | 10 |
| 29 | | 4400 | | 29 |
| 18 | | 4500 | * | 29 |
| 7 | | 4600 | | 18 |
| 18 | * | 4700. B | | 18 |
| 7 | | 4800 | * | 18 |
| 7 | | 4900. B | | 18 |
| 7 | * | 5000 | | 7 |
| 7 | | 5100. B | * | 18 |
| 7 | | 5200. B | | 18 |
| 18 | * | 5300. B | | 18 |
| 7 | | 5400 | * | 18 |
| 7 | | 5500 | | 18 |
| 7 | | 5600 | | 7 |

3. **QVANDO** — When, finally, both the intercalary day is omitted in some centesimal year and the Moon needs an equation; or else neither is the intercalary day omitted nor does the Moon need an equation — then the new moons neither rise nor fall, but occur on the same days as before.

HÆC — If these precepts are observed, it will be easy to construct the table of numbers that have to be added to the golden numbers so that the equated golden numbers may be produced. From the preceding table it appears plainly that you have not always kept the three precepts given above. Moreover, we have set the sign * against those centesimal years in which the Moon is equated; and against the centesimal years that are leap years — those, that is, in which the intercalary day is not omitted — you have the letter B written in. We have also prefixed to this table the month of March, with your equated golden numbers.

VERVM — But I shall teach you a little more carefully by what method the numbers are to be extracted for the finding of the equated golden numbers. Since the year 1800. has 11., we shall put 0. for the year 1900., by the first precept; for since in that year the intercalary day is omitted and the Moon does not need an equation, the new moons will fall back. And therefore, the golden number being 1. in the year 1805., the equated golden number was 12.; and in the year 1900. it will be 1., one day below the num-[ber]

-ber 12. But since in the year 2000. the intercalary day is not omitted and the Moon does not need an equation, we shall keep 0., by the third precept. Likewise, since in the year 2100. both the intercalary day is omitted and the Moon has to be equated, we shall again keep 0., by the same third precept — so that, the golden number being 1., the equated golden number is also 1. You, however, have the number 19. to be added to golden number 1., and the equated golden number 20., which lies below 1., and so you force the new moons to descend.

Again: the year 3200. has the number 13., and in the following centesimal year 3300. the intercalary day is not omitted while the Moon does need an equation. The new moons will therefore rise by one day, as the second precept requires, and accordingly the number to be taken is 24., to be added to golden number 1. You, by contrast, force those same new moons to descend, against the reckoning of the new moons, because you keep 13. as the number to be added, so as to make the equated golden number xiiij. So either the new moons do not run ahead by one day in 304. years — which you will not concede, since it contradicts Hipparchus and every computist — or else you have certainly gone wrong in recording the numbers that must be added to the ordinary golden numbers if the equated golden numbers are to be produced. From all this it will not be difficult to understand by what method the numbers we add have been assembled.

VT — To let you see that the new moons are shown more correctly if you had traced out the equated golden numbers as we have just explained, weigh the 3. examples that follow. In the year 2109., with golden number 1., you make the

equated golden number 20., where we set 1. But calculation puts the new moon in March on day 28. at hour 23., which you throw back to day 31.; we, more correctly, to day 30.

ITEM — Likewise, in the year 5244., with golden number 1., your equated golden number is 8., placed beside day 13. of March; ours is 19., set beside day 12. of March. Calculation gives the new moon on day 11. at hour 3. of March, and the new moon of our equated golden number comes closer to it than yours does.

RVRSVS — Again, in the year 3648., with golden number 1., you set the equated golden number at xiiij., beside day 8. of March; we, by contrast, have the equated golden number 25., beside day 6. of March. Since calculation offers the new moon in March on day 5. at hour 6., you can see plainly that day 6. comes nearer to this new moon than day 8. does. And in fact the full moon of this lunation falls on day 20. at hour 1. of March, before the ecclesiastical equinox. Your Easter, then, which you celebrate in March, belongs to the last month. See, therefore, how badly matters go with your equated golden number xiiij. The same test can be made in the other centesimal years in which our numbers — the ones by which the equated golden numbers are produced — differ from yours. For the new moons of our equated golden numbers always come closer to the new moons found by calculation than yours do.

SATIS ne — Have you now seen clearly enough, my dear Germann, what that calendar of yours amounts to — the one you boast of so loudly, on whose breath you swell so — even if you were to propose no rules adapted to the ordinary reader's grasp, but rather to thrust upon us the true equinox (and whether that serves any purpose at all, no sane man can fail to see)? Do you see, I say, how far short it falls of what you could, with puffed-out cheeks, as the saying goes, proclaim complete in every particular? And so, since you have by no means built a calendar for common use — as was to be wished, and as I took care to urge upon Maestlin — one course alone remains: either receive the Gregorian calendar with your fullest approval, or turn your mind and your labour, from the ground up, to devising a new one. That is what I, for my part, put to Maestlin.

HIC RHODVS, HIC SALTVS. [Here is Rhodes, here is where you jump.]

FINIS.

ADMONITIO THEODOSII RVBEI PRIVERNATIS S.
THEOLOGIÆ, ET V. I. D. Pro CHRISTOPHORO
CLAVIO BAMBERGENSI SOCIETATIS IESV
ADVERSVS FRANCISCI VIETÆ
EXPOSTVLATIONEM.

A Warning by Theodosius Rubeus [Teodosio Rossi] of Priverno, Doctor of Sacred Theology and of Both Laws, on behalf of Christoph Clavius of Bamberg, of the Society of Jesus, against the Remonstrance of François Viète.

Set as a full divisional title page in display capitals, line for line as printed:

ADMONITIO
THEODOSII
RVBEI PRIVERNA-
TIS S. THEOLO-
GIÆ, ET V. I. D.
Pro
CHRISTOPHORO CLAVIO BAMBER-
GENSI SOCIETATIS IESV
ADVERSVS FRANCISCI VIETÆ
EXPOSTVLATIONEM.

(V. I. D. = *Vtriusque Iuris Doctor*, "Doctor of Both Laws"; the Pro line and the two lines naming Clavius are set in italic.)

CLEMENTI VIII. PONT. MAX. THEODOSIVS RVBEVS
PRIVERNAS. F.

To Clement VIII, Supreme Pontiff — Theodosius Rubeus of Priverno. [The closing F. is an abbreviation left unexpanded in the print — probably a dedicatory formula (*felicitem*, "wishes happiness"); [?] as to its expansion.]

EDIDIT — François Viète has published a calendar of his own and stamped it with the title of the *Gregorian Calendar* — far too boldly, to put it no more harshly, since the true Gregorian calendar was already in existence and had been received into use by the Catholic princes. Nor was he content with that. He wrote against the reform of that same calendar, which had gone out to the public only after the greatest care had been taken over it and the most learned men had given it their study; and on top of that he issued a remonstrance against

Christoph Clavius, my teacher in mathematics, who had not provoked him by so much as a word — hoping, perhaps, to frighten Clavius off the legitimate defence of the Gregorian reform. I could not, then, command myself to leave so unjust a remonstrance unanswered, since I could see that Clavius, with the moderation of temper that is his, preferred to let the matter pass in silence rather than pay back abuse with abuse. And so, since this case has to be argued before you alone, Most Blessed Father — for the cognizance of it is yours — I decided to publish this *Admonitio* of mine under your most august name, so that every handle for provocation may be taken from Viète, and so that your authority may at last set an end to this controversy.

ADMONITIO THEODOSII RVBEI PRIVERNATIS S. THEOLOGIÆ, ET I. V. D. Pro CHRISTOPHORO CLAVIO BAMBERGENSI ADVERSVS FRANCISCI VIETÆ EXPOSTVLATIONEM.

ADMONITION of Theodosius Rubeus of Priverno, Doctor of Sacred Theology and of Both Laws, on behalf of Christoph Clavius of Bamberg, against the remonstrance of François Viète.

AS SOON AS YOUR REMONSTRANCE AGAINST Christoph Clavius, my teacher, reached us — François Viète — I read it right through, and read it again, with the keenest attention, as coming from a man of the greatest learning. I could not bring myself to believe that such a man would credit mere false rumours so far as to attack a man of the highest character and the greatest modesty, when Clavius had neither provoked nor challenged you, and when the defence he wrote of the Gregorian reform of the year — against the criticism, or, to use your own word, the accusation, that you published long ago — had not yet appeared. Had you chosen to wait for it before making your complaint, you would certainly have seen how respectfully you are mentioned throughout, and with what restraint Clavius sets out his defence, without a trace of bitterness or abuse. That might perhaps have drawn you back from so venomous a remonstrance; but you preferred to strike first, supposing perhaps that Clavius, dazzled as it were by the flash of your eloquence, would give up his case for lost. If that is the guess you made about him, you will never be acknowledged a good prophet by those who hold that a good guesser makes a good prophet.

I therefore took it hard that you should have entered this contest at such cost to your own reputation, and I could not restrain myself from warning you, in a few words, that it was not permissible to leap from a scholarly discussion to a remonstrance so injurious and so full of abuse. For I do not think that saying of Hesiod's — [Greek: κεραμεὺς κεραμεῖ (kerameus keramei, "potter [envies] potter" — *Works and Days* 25)] — is fit for men brought up in the humane letters, among whom a shared devotion to study usually does, and ought to, produce affection without disparagement. Moreover, since what is at issue (as you yourself assert) is a public cause, one that concerns the mysteries of our Religion, the concord of the Christian commonwealth, and the divine authority of the Supreme Pontiff, then just as the accusation touches everyone, so the defence is everyone's business — and mine on more grounds than one. For you appear to have made improper use of the power and authority of the Supreme Pontiff, among whose household I am enrolled. You have likewise made a mockery of the deliberations of other orthodox princes, and above all of the August Emperor Rudolph II, to whose kindness and generosity I acknowledge myself deeply indebted, since my whole family has been enriched with enormous benefactions and privileges. And finally you have shown contempt for the night-work and the long vigils of those other most expert men whom Gregory chose to undertake this task — above all those of

Christoph Clavius, under whose instruction I served my apprenticeship.

Let me now go on to set out my reasons for thinking that this piece of writing has damaged your reputation. There are a good many of them, and I have decided to take them in order. Since you bring forward against Clavius both an accusation and a remonstrance — the first of which requires a crime, the second an injury — I shall begin with the accusation, and my first question to you is this: on what criminal charge do you mean to arraign Clavius? Unless I am mistaken, you will say, as you profess, that you mean to prosecute him under the head of corrupting the Calendar and of contempt of Religion, and of plagiarism besides. I am ashamed to see so learned a man handle the subject so childishly. For that accusation of yours is a reproof rather than an accusation. Grant that men who go wrong in matters of learning may be corrected, put right and warned of their error; even so, mistakes — apart from those that touch Religion — are not usually charged as crimes, but put down to lack of skill. And so, since here it is a question

Nec de vi, neque de cæde, nec veneno.

"Not of violence, nor of murder, nor of poison."

— nor indeed of any capital crime at all, but of the correction of the Calendar and the restoration of the year — I cannot help wondering that a man of such learning should have wished to impose on us by trading on the double meaning of the word "accusation," and to misuse the authority of the law and of the canon that deny accused men the licence of bringing charges before they have cleared themselves of the crime that presses on them. For this neither is, nor can be, a true judicial accusation: no crime is at issue; no formal indictment [inscriptio] has preceded it (and if you are wise you will take my advice and abstain from one, so as not to run the risk of the counter-penalty, especially in a case involving an outrage against Religion); and finally it is not brought before any judge sitting judicially to take cognizance of the grounds of accusation. But neither should so great a jurist as yourself have been unaware that the prohibition in question is not to be admitted without exception — namely, unless the accusation has its case entangled with the defendant's defence, or unless the accuser is being prosecuted by the defendant on a graver charge. Both of these fit the present controversy, if — on your own authority — it can have the force of a true accusation. For the defence that Clavius is preparing, and has already carried through to the finish [ad vmbilicum], cannot be prised apart from your accusation; and, what is the heart of the matter, he can prove that you have offended against the *lex Cornelia de falsis* [l. Corneliā de falsis], since you have not only corrupted a Calendar that rests on the authority of the best of Pontiffs, but have also stamped it with the false title of the *Gregorian Calendar*.

But since you are so far ignorant of what Clavius will reply to your accusation, and what line of defence he will take, I cannot help wondering to see you prophesying about matters you know nothing of — unless it was your own conscience that drove you into these speculations, because you are afraid you cannot maintain your own position; and that, I suppose, is why you wanted to frighten Clavius off the undertaking with this little declamation of yours. But he for his part holds fast to the helm [clauo hæret], and will not desert his post until he has brought the ship safe into harbour. Meanwhile, though, when I see so great a man insisting on these quibbles, the suspicion comes into my mind that you meant to play with us rather than to make fools of us. For I do not suppose you think us so witless that you could hope to deceive us with so transparent a sophism.

As for the charge you bring about the corrupting of the Calendar, I am wise enough to leave that whole business to Clavius to handle. Since this controversy has to be settled by mathematical demonstrations, I should be a fool to want to insert it here among your scholastic declamations, against Aristotle's own rule.

And on that discussion depends the complaint about contempt of religion, which touches not only Clavius but the honour of the Supreme Pontiffs — an honour you, as a Catholic, ought to have had at heart. As for the charge of plagiarism, I have absolutely nothing to say about it. Clavius has not sold a free man, nor concealed another man's runaway slave, nor abducted or corrupted one, nor lent his services to someone who was corrupting one; he has not rifled your desk, nor published your opinion about the Calendar as his own — on the contrary, he has sharply refuted it, as will be plain from the book now finished, which will appear in public any day now. This dreamed-up plagiarism, then, cannot incur the penalty of the *lex Fabia* [legis Fabiæ]; instead the penalty of a false accuser awaits you, or at least — to deal with you more gently — that of a collusive prosecutor [prævaricator], should anyone choose to proceed against you at law.

Now I hurry on to your remonstrance, which, as I said, requires an injury. If you can prove that Clavius inflicted one on you, I do not refuse to take the beating for him at your discretion. But to make the matter clearer, the origin of this quarrel must be traced back a little further; and in that I shall, so far as it lies with me, explain the whole affair exactly as it really happened.

Gregory XIII, an excellent man and a great lover of the Christian commonwealth, saw that a reform of the Calendar was necessary, so that with the slipping of the years matters should not reach the point where Easter was no longer kept at its lawful time, and where the so-called movable feasts, and those that fall at the fixed seasons of the year, gradually drifted into another part of the year — until at length the summer months would have turned into winter ones. He therefore began to consider the reform of the Calendar. At that time Antonio Lilio [Antonius Lilius] laid before him the paper of his dead brother Luigi [Aloysius Lilius] on a method of correcting the year, which Luigi had been prevented by death from completing. Gregory instructed Clavius, and several other highly expert men, to examine and approve Lilio's reform and then to settle on some definite method of correction — which they did, carefully and with every diligence applied. Yet that most prudent Pontiff was unwilling to decide anything in so great a matter without first communicating it to the orthodox princes of the Christian world: the reform was sent to them, so that they might appoint expert mathematicians to a commission and examine whether it should be accepted or rejected. Having weighed the matter thoroughly, they approved this reform of the Calendar; and so it came about that Gregory ordered by his own decree [diplamate] that the approved reform be observed by all. Only the heretics, out of hatred of the Roman see, refused to obey it — and perhaps some others as well, who still wish to live in schism, like those men who, once grain had been

discovered, preferred to feed on acorns. This reform has been observed from the year 1582 to the present day. But you, after so many years, have surfaced as its fiercest opponent — whether rightly or wrongfully, the outcome of the case will show. And in the meantime, where in the world were you hiding when this reform was being put to the mathematicians of Germany, France, Spain and other nations for examination? At that time the duty of your office demanded that you give your opinion for the common good of the Church, mark the errors, and point out the right way to correct them. But perhaps you will say that you were not summoned to that consultation,

very well. Even so, you could have done what many other distinguished men did, who sent in their contributions for the reform of the Calendar to the Roman commission by letter. But let us allow that you were at leisure at that time, so far as we are concerned, and let us admit you even though you come late, when the thing is finished, and stir up a controversy about it. Let us look at this one point: on what confidence — puffed up with what [Greek: κενοδοξία (kenodoxia, "vainglory," empty self-conceit)] — did you rush in to decide this contest? For without taking counsel with a single person, you abruptly had that "accusation" of yours, as you call it, against Clavius put into print, when it would have been more courteous to disclose your view to him first and ask him to answer your objections. Yet even that could have been borne, had you not on your own private authority published your Calendar under the title of the *Gregorian Calendar*. What do you suppose Gregory would say, if he came back to life and saw your effrontery — to put it no more sharply? "Come now, Viète, what are you about? On what authority do you undertake to attack our Calendar, worked out by the long vigils of the most eminent men, approved by the Christian princes after consulting the most expert mathematicians, and confirmed and published by the perpetual constitution we issued? And why do you falsely ascribe to us something that neither existed in our lifetime nor was ever fortified by the authority of our successors? Away with such reckless daring! Keep your own and do not defile ours — *neque assumas testamentum meum per os tuum* [and do not take my covenant into your mouth — Psalm 49(50):16, Vulg.]." What would you answer to this, Viète? Not so much as a grunt, I think.

This, then, was the beginning of the present controversy, and no one can fail to see that you were the challenger and Clavius the challenged. And how did Clavius respond? Two years ago, on the order of Pope Clement VIII, he was seeing through the press the book on the new method of restoring the Calendar which Gregory had promised; and in the meantime that novel *pseudo-Gregorian* concoction of yours came out, together with a pamphlet in which you attack the

whole method of restoring the true Gregorian calendar and — if you are to be believed — maintain that it must be hissed off the stage altogether. This verdict struck as harsh not only the Supreme Pontiff, a man who loves truth and quiet above all things, but everyone who has now used the Gregorian Calendar for a full twenty years — the more so because you set out to overturn it with all the force of your intellect, in contempt of the decree of excommunication passed against those who use any other Calendar. And so, on the occasion thus arising, Clavius began to plan a *Defence* of the Calendar approved by the whole assembly of orthodox Christian princes and received into use; and it will shortly be on view in print — even if it makes your eyes smart. But after all, what injury was done to you by any of this? "A great deal," you say: in the letters he writes to a number of people, Clavius indicates that he has thoroughly refuted my pamphlet in his book on the new restoration of the Calendar, which he will publish some day, if God so please. So this is that appalling injury, this that insult worthy of your remonstrance, which you magnify and all but turn into tragedy — as if Clavius were not free to write in defence of the Pontifical Calendar, when you have claimed the freedom to attack it with all the force of your intellect. If your own findings please you, and you fight for them as for altar and hearth, why should anyone grudge it if Clavius takes the field to defend ours, and uses in yours the same right that you use in ours?

Non solos tangit Atridas iste dolor.

"That grief does not touch the sons of Atreus alone."

It is not right to endure your insults and leave our cause undefended, especially when in these times the Roman Church has quite enough rivals and enemies to bear. If you think you are wronged because we did not at once embrace your new formula of restoration, consider that our own was not published at once either, but only after long investigation, transmission to the princes, and the approval of the mathematicians of the better part of Europe. And are you indignant that yours is not accepted by us [Greek: ἀβασανίστως (abasanistōs, "without being put to the test," untested)]? *This* is the injustice, Viète, and the true [Greek: ἀλαζονεία (alazoneia, "imposture," boastful pretension)] — not the one you rashly charge against us. Were we bound to believe you at once, as though you were a new Pythagoras, simply because "he himself has said it"? Reason is not on your side. We must not lightly depart from what long use has established; but you seem far too devoted to the doctrines of the son of Mnesarchus, since you are busy imposing on us not a five-year silence but a perpetual one, as though you were exercising a dictatorship. That is why you breathe a kind of palingenesis, when you keep pressing on us your resurrected *Apollonius Gallus* and *Sosigenes*; indeed

they hand down that he was also a [Greek: μάντις] (mant[is], "seer" — accusative of μάντις; four letters legible, the compressed terminal cluster supplied in brackets)] and Divine — and in that respect you come very close to him, since everyone admits not only that you are learned in the science of numbers to the point of a miracle, but also that you pronounce so boldly about matters of which no knowledge is possible, as if you had them before your eyes, thoroughly explored. Do you dare to play the prophet even about Clavius's learning in theology, of which no monuments have yet appeared? And still you boast that you mean, today or tomorrow, to break down his efforts — how that can be managed I do not see, since those efforts have not yet reached you. What is more, you dream up prophecies that Clavius's defence will be published as false and plagiarized, on a re-dated day [repetita die]. You are in too much of a hurry, Viète; you give your case away by the excessive heat of your haste and your indignation. Be patient, and let Clavius's defence come out in public; and if you find anything wrongly written, or falsely demonstrated, or immoderately said, then refute it, arraign it, correct it — and in the end celebrate your triumph as well. But wait a while, in case truth herself forces you to withdraw this whole remonstrance of yours; otherwise you will hear applied to you that well-worn gibe of your own countrymen, that you are like the eels of Melun, which squeal before they are skinned. But if in the end you win the case on better arguments, then you will be for me not only an Apollonius Gallus or a Sosigenes, but even — if you prefer — the Delian Apollo.

And so, seeing that in this whole tragedy of yours you have so far found no injury done to you — unless you measure injury by our not having assented to your discoveries before their truth had been examined — you nevertheless try to convince us that the Protestants will embrace your true reckoning of the year, while admitting that they will acknowledge it as coming from you and not from the Supreme Pontiff. I could wish that this had not come from you: you who, to prop up your own decrees, seem to set such store by the approval of heretics, once the consent of the orthodox has been disregarded — those men, I say, who out of hatred of the Roman Church, when they saw that they were without a head, chose rather to court the Primate of the Greek schismatics than to acknowledge the true Vicar of CHRIST, however fruitless their attempt turned out to be.

Still, I am aware that I may perhaps be pressing my attack on your remonstrance too sharply. Yet I judge that this was necessary, since in you Clavius has for his opponent a jurist, a theologian, a mathematician, an orator, and finally a poet — an all-round athlete [pentathlum]. This contest therefore calls for no small

diligence, industry and learning if it is to withstand the onset of so great a man. But we put our trust in the goodness and the truth of our case, which is not to be handled as a piece of oratory and admits no poetic allurements. For indeed —

Ornari res ipsa negat contenta doceri.

"The subject itself refuses to be dressed up: it is content to teach."

So as soon as Clavius's defence appears, then set about this business, and bid the skirmishings of the schools a long farewell — without forgetting, in the meantime, that moderation and modesty of which you will find a shining example in Clavius's writings. And if I could seem to you a man of any credit (for I am wonderfully well disposed towards your learning, your standing and your seriousness), I would give you advice even unasked — but in your ear, so that no ill-natured person should take it amiss. [Greek: τὸς ἄλλος ἐνά[?]ιζ[?] ἀπὸ δ' Ἑκτορος / i[?]χε[?] χ[?]ρᾶς — a Homeric tag, apparently "kill the rest, but keep your hands off Hector." The first two words are set with the 8 (ov) ligature sort and the last with this fount's ρ rho sort, both kept here as printed; a further vowel stands after χε before the word-space, and it too is left unread. The flagged clusters are withheld rather than completed from the received text.]

RESPONSIO LAVRENTII CASTELLANI PATRITII ROMANI AD EXPOSTVLATIONEM FRANCISCI VIETÆ ADVERSVS CHRISTOPHORVM CLAVIVM.

REPLY of Lorenzo Castellani, patrician of Rome, to the remonstrance of François Viète against Christoph Clavius.

RESPONSIO LAVRENTII CASTELLANI PATRITII ROMANI Ad
Expostulationem Francisci Vietæ aduersus Christophorum
Clauium.

Reply of Lorenzo Castellani, patrician of Rome, to the remonstrance of François Viète against Christoph Clavius.

PRÆFATIO AD LECTOREM.

PREFACE TO THE READER.

FRANÇOIS VIÈTE, with real effrontery, wanted to foist a calendar of his own on the whole world in place of the Gregorian one, and published it with the Gregorian decree [diplomate Gregoriano] attached, without having sought any man's authority for doing so. But when he learned that Christoph Clavius — a man distinguished alike for learning and for piety — meant in his *Explanation of the Gregorian Calendar* to make public the absurd consequences that follow from Viète's contrivances, he brought out a thoroughly disgraceful remonstrance against him: either to frighten Clavius off what he had undertaken, or because he hoped that by shaking a solid and firm argument he could prop up his own fictions. To me, at any rate, he seems to be doing nothing else than trying to destroy the authority of the Gregorian Calendar root and branch. That is why, in the first place, he ascribes to Clavius alone a work on which the most eminent men, called in from nearly the whole world, laboured for almost a full decade — a work approved by pontifical authority and by now received by every people. High praise indeed, if Clavius stood in need of it. And then, in order to overturn the Calendar, he sets about undermining Clavius's standing. So when I read this remonstrance I lost patience, and I could not help answering its heads of complaint briefly — not only because the respect I owe to my teacher Christoph Clavius demanded it of me, but plainly because I saw that the matter touches Christian conduct and the public peace. For who could bear to see a man of the deepest piety, who has deserved so well of the common good, disparaged so bitterly, and with the deliberate design that the lowering of his authority should turn to the damage of Religion and of the public interest alike? If Viète had anything in the Lilian Calendar [Calendario Liliano] that he could not approve, he ought to have brought it forward at the time when it was sent by Gregory xij. to the Christian princes, and at the same time to Henry iij., King of France, so that they might order it to be examined and weighed by their own mathematicians and should accept it unless they had something better to offer. Why does he turn up only now, when twenty years' use has spread it so far and wide and it has struck such deep roots? And if he has at last learned something now that he cannot know by himself alone, why does he not act properly, as good men should, and lay it before those whom it concerns, to weigh and approve? Instead he suddenly stamps the name of the truly Gregorian Calendar on his own inventions, and prefixes the Gregorian decree to them. But Clavius shows perfectly plainly how many absurdities follow from that pseudo-calendar of his. As I said, I shall answer the remonstrance, and shall insert the whole of it as I go. For I am sure that it will be made plain to everyone — not so much by my reply as by the remonstrance itself — that in this business Viète is led by no zeal for a

good cause. And so that his words may be distinguished from my reply, I shall set the wording of the remonstrance in larger type. He begins, then, as follows.

I long ago accused Christoph Clavius.

Does Viète really mean that Christoph Clavius was accused by him? For if he actually did accuse him, he ought first to say before whom he laid the accusation, and when; then whether the accusation was admitted; and besides, why the princes should tolerate a man who is himself a defendant acting against divine and human law. But if there was no lawful accusation — indeed, if there was none at all — what need was there to cite, lower down, both the Canon and the Rubric? Let Viète, who professes to have reconciled the motions of the heavenly spheres to perfection, explain on what principle these few words of his hang together; and let him, if he pleases, hammer out a new Dialectic here, just as he hammered out a new Calendar there.

On the corrupted Roman Calendar.

It is certainly a most serious crime to corrupt a thing which the Supreme Pontiffs, the councils [Consiliis, so printed], and the whole Catholic Church have always worked so hard to keep uncorrupted — and rightly worked: for if the Calendar is faulty, the order and the due timing of things human and divine alike are thrown into confusion. But whether a crime of this kind — the corrupting of the Roman Calendar — falls on Clavius or on Viète, the *Explanation of the Calendar* itself demonstrates. Notice, though, how he attributes the making of the Gregorian Calendar to Clavius. For although under the single name of Clavius he is accusing and condemning all the learned men who sweated over the making of it, and all the princes and peoples who received it — and he is perfectly aware of that himself — he still reckons it safer and surer that they should all be wounded alike by him if he aims his blow at one man.

For as divine and august as the Gregorian decree on the restoration of the year is, so profane and ill-starred is the Clavian execution of the Gregorian decree — and its defence.

So on this account, when Clavius had corrupted the Calendar, Gregory xiiij., Supreme Pontiff, framed his divine and august decree to set before the universal Church, for its embrace, that very Calendar which Clavius had corrupted! Did Clavius then dare what Viète dared? Did he prefix a pontifical decree, without the Pontiff's knowledge, to a Calendar he had himself corrupted? And was Clavius more successful in a wicked act than Viète in a good one? — who, in the Curia [in Curia totius, so printed; the word *totius* is left without the noun it should govern

[?]], before the eyes of so many distinguished astronomers who had been summoned from every quarter, and before the eyes of Gregory himself, when he set the divine and august decree at the head of a corrupted Calendar, contrived to escape the notice of the whole world, of a City packed with inquisitive and sharp-eyed observers, and of the Pontiff himself, most cautious and most clear-sighted of men — whereas now to achieve

he could not, set so far off, with everyone else busy about other matters, in a Calendar he had himself corrected — so Franciscus Vieta [François Viète] says. Was Gregory, then, framing that decree for an uncertain future, approving in advance a Calendar that would be born at some later date? Was he handing Viète a page signed in blank, so that after so many Pontiffs — with Clement alive and administering God's Church in the holiest and most faithful way, and correcting a great many things back to the ancient standard of piety, and himself wholly unaware [*plano* so printed] — some Gregory-Viète might correct the Calendar in France? What a mathematician the man is, who either does not see what all this amounts to, or supposes there will be any sane man alive who does not see it!

Gregory had used Aloysius Lilius [Luigi Lilio] as his Sosigenes; and since Clavius could not understand the working papers [*aduersaria*] of that man, whom fate had snatched away, he wretchedly corrupted them, and chose to fall into the crime of contempt of Religion — ready to overturn everything at whatever risk — rather than to be seen as ignorant of the subject.

What, I ask, are we to call defamatory pamphlets [*famosi libelli*], if *this* passes for a Remonstrance? But our good man is always stuck at the same point: the more easily to overturn the authority of the Gregorian Calendar, he fathers its whole composition on Clavius. And though he himself pretends not to know which men contributed their labour to that work, others are not therefore ignorant of it. For it is perfectly well known — still within the memory of the survivors, and celebrated in the records of letters — that a great many outstanding mathematicians took part in the correction of the Calendar; and above all the rest there took part Antonius Lilius [Antonio Lilio], superbly skilled in mathematics, Aloysius's full brother, who from the very beginning had helped his brother in drafting that little book, and was no less privy to Aloysius's mind in the matter than Aloysius himself. And so, since he and a great many others were present at the consultations held on the correction of the year, they were able to explain anything in Aloysius's papers that Clavius had failed to understand; nor would they in any way have allowed everything to be overturned by one man for the

covering-up of his own ignorance — unless Viète takes them for downright irreligious men, or for blockheads. And yet it is easy to see which of the two is overturning everything: Clavius, who keeps the Church's ancient practice and expounds only what was decreed in an assembly of the most learned men [*doct[i]ffimorum*, the *i* broken in the print] and what Gregory ratified by pontifical authority — or Viète, who brings in an unheard-of beginning for the year, and, importing other novelties as well, at whatever risk seeks a warrant for his own rashness from the Gregorian decree.

It is no business of mine to pronounce on his competence or incompetence in matters mathematical and theological. I shall pronounce — and not wrongly — if I have to. But whatever kind of mathematician he may be, he has introduced a false lunar period into the equation of the epacts [*æquatio Epactarum*].

Many of Clavius's works are in print, and they show what his learning is like. Let Viète pronounce on that as much as he pleases, provided he does it in a manner worthy of himself, and not wrongly. For while he threatens that one day, if he has to, he will pronounce — and not wrongly — meanwhile, when it is in no way either necessary or fair, he pronounces wrongly. That lunar period is not false, and Clavius did not introduce it: he took it over from Ptolemy, Alfonso [Alfonso X], Copernicus, and others — something an excellent mathematician ought not to have been unaware of. But in his usual manner and practice Viète supposes that what is good can be spoiled more easily by himself, once he has diverted it onto Clavius, than at its own sources.

He is bound sometimes to place conjunctions [*synodi*, new moons] at the full moons, and full moons [*panseleni*] at the conjunctions. And if that is in any way to err, then, in the proverb's phrase, it is τὸ παράπαν τῆς ὁδοῦ [Greek: *to parapan tēs hodou*, "clean off the road" — the *ov* is set out in full here, not as the ligature sort 8] — since the middle of the full moon is set diametrically opposite the middle of the conjunctions, 8 ψευδονύμως [Greek: the first token is a single ligature sort (8 = *ov*) carrying a breathing, i.e. *οὐ*; the second is printed ψευδονύμως, with the page's *o* where the received form has *ω* (ψευδονύμως) — "not falsely so named"].

Long before Viète's book came out, Clavius saw perfectly well that this drawback arises in the Lilian equation of the epacts. It does not occur on account of the lunar period, as Viète falsely charges, since that period is the one belonging to the ancient astronomers — and the very one Viète himself employs. Moreover, that drawback will only come about after a very long stretch of time; and at the same

time Clavius prescribed the method by which it is to be met, and corrected Lilius's equation. But Viète runs into exactly the same thing, and does not notice that he himself is straying τὸ παράπαν τῆς ὁδοῦ, nor does he offer any remedy at all. Indeed, though he knows his proverbs, he is not afraid to take offence at other men's warts when he has swellings of his own — or, to keep the saying from being turned against himself: ἄλλων ἱατρὸς αὐτὸς ἔλκεσι βρύων [Greek: *allōn iatros autos helkesi bryōn*, "a physician of others, himself teeming with sores"].

And whatever kind of theologian he may be, he has adopted a profane beginning of the year for the solemn feasts, and from this has followed an absurd ordering of the epacts, and an unfair and monstrous division of the months, with the Paschal new moon [*Neomenia Paschalis*] taking its law from other quarters — ἄνω ποταμῶν ἱερῶν [Greek: *anō potamōn hierōn*, "the sacred rivers [run] upstream"] — whereas true Theology, received from the word of God and from the blessed Fathers, and not also Hebrew and superstitious as the Adiphorists hold (on that very champion's own testimony), teaches that Nisan is the first of the months in dignity, and that from it the year's solemnities are to be renewed; and that the worshippers of the pagan religion themselves caught the scent of this very thing in the performance of their own sacred rites, not without a great mystery of our true religion, which it has been a sacrilege to despise.

The beginning of the year which the Church now uses neither ought to be called profane, nor is it. For it is the one she has always used since the Council of Nicaea; and from it the Epacts have been rightly ordered in the Calendar; nor did Gregory xij. approve any division that was either unfair or monstrous. Nor did that body of most learned men, who collaborated successfully on the restoration of the year with joint effort and diligence, disregard the beginning of the first paschal month from 8 March, since they knew perfectly well that this had been observed by the Nicene Fathers, whose lead they were following. But they chose not to begin the ordering of the Cycle from that point, because no necessity required it. Even the Nicene Fathers themselves disregarded this, since to 8 March they assigned not golden number 1. but 16. — especially as the Cycle can begin from any Epact whatever, and therefore also from the xxij. assigned to 8 March in the Gregorian Calendar [*Calendario* so printed]. What is it, after so many ages, to summon from some other quarter the course of the years drawn from a single source — what is it but, to the insult of antiquity, to drive ἄνω τοὺς ποταμοὺς [Greek: *anō tous potamous*, "the rivers upstream"], or (what is likewise not permitted) to divert a river's channel?

Therefore I have set against the false Clavian lunar period the true one — the one that is truly Lilian and Gregorian.

That period, as I have said, is neither false nor Clavius's; Lilius too adopted it, and Gregory confirmed it. Indeed, not even Franciscus

Vieta acknowledges any other lunar period — so that it is truly astonishing that this Corrector should claim to have set against the Clavian Lunar Period (that is, against the very one he himself also uses) a true one, truly Lilian and Gregorian. But in fact he has not set another period against a lunar period; he has only set a false Calendar, and a genuinely Vietan one, against the Gregorian. And in that business he is not merely an excellent mathematician but more than divine. For a man who neither knew Lilius nor was ever known to Gregory has all the same brought out into the light a "Lilian and Gregorian" Calendar, with a new beginning of the year that neither of the two ever dreamed of — so that each of them might truly say ὥς πολλὰ μου κατεψεύδετο [Greek: *hōs polla mou katepseudeto*, "what a mass of lies he told about me"; the *ov* of μου is set out in full, not as the ligature sort ϑ, and the page sets the acute over the ε of κατεψεύδετο, not over the υ].

And, a profane beginning of the year having been adopted, [I restored] the beginning laid down beforehand by the Nicene Fathers out of God's law.

About the beginning of the year I have said enough already: Viète ought neither to call it profane nor to think it so. If he insists on naming and judging it that way, then it is the holy Catholic Church that names and judges it — the Church that has always used this beginning and marks it off from profane things by her own holy usage. Here too that saying from Scripture has its place: what God has cleansed, do not call common. Nor does he bring in the beginning laid down beforehand by the Nicene Fathers out of God's law: what he brings in is new and unheard-of in the Church, something he has lately fabricated out of the rule of his own Computus, ἐκτὸς λεωφόρου βαδίζον [Greek: *ektos leōphorou badizon*, "walking off the highway"; the *ov* of λεωφόρου set as the ligature sort ϑ; the participle is printed with the final -ον, where the sense wants βαδίζων — transcribed as set].

From this there followed a consistent ordering of the Epacts, and a correct and even division of the months, with the paschal New Moon [*Neomenia*] beginning the cycle, and the year's remaining New Moons taking their law from it, as was fitting, in accordance with the divine decrees of the Fathers.

But the book of the *Explicatio Calendarii* shows how discordant an ordering of the Epacts arises out of Viète's new beginning of the year. And if he is as certain of his own correct ordering of the Epacts as he makes out, why does he fear a refutation from Clavius? A man who sees plainly that he has demonstrated something actually welcomes the arguments of those who think and argue against him. Let him therefore boast less, and less tear down other men's reputations with abuse: nothing is stronger than the truth, and therefore nothing safer — she will come forward of herself and defend herself.

Having brought out a pamphlet on the subject and presented it, on royal authority, to the Supreme Pontiff, under the title of a *Report on the truly Gregorian Calendar*, addressed to the Doctors of the Church — to whose judgement and censure I submitted both myself and my writing.

There is much here that Viète, I imagine, would wish undone and unsaid, if deeds and words could be recalled. For what was the part of a prudent and dutiful man, if he had something about the Calendar that he thought ought to be brought forward publicly — and especially at a time when all Catholics were at rest in the Calendar as already restored, and held it to be truly Gregorian, as it is? Ought he not to have disclosed his plans to the Pontiff before branding them with any title at all? While the Pontiff was ordering these matters to be looked into and examined carefully and at length, as is fitting in so great a matter so soon after the correction, so that no suspicion of levity could attach to pontifical decrees — ought he not to have waited for the Pontiff's consent before he printed? Grant that he went wrong here; what next? He says the pamphlet was presented to the Pontiff. Suppose it was: ought he not, until the Pontiff answered, to have held back all the other copies in the meantime? If anything new was to be set in motion, the Calendar the Church now uses would have to be abrogated, and Viète's approved and promulgated, so that there should be no disturbance. And yet Viète — not merely before his pamphlet reached the Pontiff's hands, but before any rumour whatever of his plans could reach the Pontiff's ears — strikes off a new Calendar, entitles it *A truly Gregorian Calendar*, prints it, publishes it, and arms it with Gregory's decree. Does a man who acts like this look as if he were submitting himself to the judgement and censure of the Doctors of the Church? Very conveniently, too, he calls a "writing" what he had already printed — so that even if he wanted to suppress it, he could not. Is this not to make sport of the Pontiff and throw everything into confusion? So that two calendars, widely discrepant and contrary to each other, circulate in the Church, and each of them with a pontifical decree? Which of them will the faithful follow — the Gregorian, or (as he calls his) the "truly Gregorian"? And what is "truly Gregorian"? Is the

Calendar that Gregory set before the Church, that the Church has used ever since and uses today, then falsely called Gregorian? On that showing Gregory was an utter fool; the Pontiffs who followed him were blind; those hand-picked mathematicians were frauds and cheats; and all mortals except Viète are σκαιοὶ[?] ἄσσοφοι[?] [Greek: the two words read as *skaioi* ... *assophoi*, "dull-witted and unlearned"; the termination of the first word and the doubled σ of the second do not resolve on the scan [?]]. Finally, I put this question to Viète: since he cites laws and canons, he will not be ignorant of the penalty laid down against those who forge pontifical letters — so what difference is there between the crime of a man who slips in a false decree, and that of a man who abuses [*abutatur* so printed] a genuine one for his own purposes, without the Pontiff's knowledge and against his will?

But it was not fair that a defendant should be condemned with his case unheard [*indicta causa*].

Once a book has been sent out into public circulation, if it is condemned, it is never condemned with the case unheard. For the book itself pleads the case both for its author and (what this man would not like) against him: it is at once his advocate and his accuser, and a witness on both sides.

And so a copy of my pamphlet was put into Clavius's hands two years ago.

Yes — printed in good type, with the title *A truly Gregorian Calendar*, and with the Gregorian decree, at the sight of which he shuddered. Though the copy was put into his hands not two years ago, as Viète says, but a few months before.

What, then, were Clavius's duties, you fair-minded judges?

Pronounce, whoever you are that are fair Judges: what were the duties of Clavius, who by the command of Clement 8. was writing an exposition of the true and truly Gregorian Calendar — in a cause that is (as Viète knows perfectly well) public, one that touches the mysteries of our religion, the concord of the Christian commonwealth, and the divine authority of the Supreme Pontiff? If any calendars turned up from elsewhere, wearing a respectable face while opposing the Gregorian one by Gregory's own authority, was it not his duty to strip the mask from them, to convict their errors and bring them into the light? To defend pontifical authority? To let neither Gregory, now dead, nor Clement, most happily alive, nor the whole assembly of the faithful be imposed upon? And, finally, to strive as far as in him lay that the public peace and the ancient rites of the Church should in no way be torn up? These were the duties of an outstanding

mathematician and man — that is, they were Clavius's duties. And in fact he performed rather more of them than Viète finds welcome; but Viète ought to set the common good before his own grievance, and to be angry with no one but himself, who let himself be carried away too thoughtlessly — and even to thank Clavius, who took pains that his offence should do as little harm as possible.

Was it his part to acknowledge and confess his own error unprompted, especially in a public cause, in which the Mysteries of our Religion are at stake —

is at stake, and the concord of the Christian commonwealth, and the divine authority of the supreme Pontiff? That, surely, seemed very much to be hoped for from a theologian of the Society of Jesus — ὡς ἱερῶ τὴν τέχνην καὶ τὰ ἦθη [Greek: *hōs hierō tēn technēn kai ta ēthē*, "as one consecrated in his art and in his character"; καί set as the ligature sort κ, and ἱερῶ printed without the iota subscript].

What error, pray, was Clavius to acknowledge as his own? He has published a great deal; if he has aimed wide anywhere, he will be grateful to a surer intelligence. Who has ever seen a *Calendar of Clavius*? What does exist is his *Apologia for the Gregorian Calendar against Mestlinus the heretic* [Michael Mästlin], and his *Castigation of Joseph Scaliger's Castigation*. Where in these he has put forward views of his own, if he has taught anything less than rightly, let Viète teach him — and Clavius will acknowledge his error unprompted. But let him stop harrying the Gregorian Calendar as though it were Clavius's, and let him remember religion, the public concord, and pontifical authority. In fact, though (as I have said more than once), a man greedy for whatever he wants understands perfectly well that Viète's Calendar cannot be thrust in unless the Gregorian is thrust out. He does not dare to fight Gregory in the open; but he does seem to hope that the Pontiff can be wounded through Clavius's side.

But however the matter turns out, we are hardly brought to condemning what is our own and approving what is another's. We are all swept away by φιλαυτία [Greek: *philautia*, self-love], however much sanctity we may feign; and by whatever art we can, we do violence to the truth so as not to seem beaten in any way. Even in wise men the desire for glory is the last thing stripped off: τὴν κενοδοξίαν ὡς τελευταῖον χιτῶνα ἢ ψυχὴ πέφυκεν ἀποτίθεσθαι [Greek: *tēn kenodoxian hōs teleutaion chitōna hē psychē pephyken apotithesthai*, "vainglory is the last garment the soul is by nature to lay aside"; τὴν set as a contraction ligature].

It is just as well that he does not exclude himself from the number of men. Let the Remonstrant, then, consider which is the likelier to be led by self-love. Is it the man who, in whatever he does about the Calendar, does nothing of his own accord, nothing on his own, nothing rashly, but by order of the Supreme Pontiffs, in a council of the wisest men, with the utmost prudence and caution — to say nothing of the man himself, plainly *ἱερῶ τὴν τέχνην* κατὰ ἤθην, whose knowledge of the subject has been on view for very many years in so great a City, and whose moderation and piety are no less? Or is it the man who pushes himself in, at no one's order or urging whose business it was — who, having devised certain things alone and by himself, first put them into print by arts not so honourable, then also published them headlong, and finally, when he was afraid they might be refuted, vomited up this new species of defamatory Remonstrance?

But that it was Clavius's business, given the charge under which he stands, to resort to recrimination — that, in truth, no one will rightly say. For the law says so, and the Canon says so: the licence of bringing charges must be denied to the accused before they have cleared themselves of the charge that presses on them, according to the rulings of the old authorities on Law. Nor could that Doctor grant himself licence to pass sentence in his own case. For the Rubric forbids it: *Let no one judge in his own cause, or pronounce the law for himself.*

A man who has the Canons and the rubrics so conveniently at his fingertips can only be reckoned extremely learned in both laws — but I have no wish to make a fool of myself over trifles.

And yet, with no regard whatever for divine and human Law, Clavius resorts to slander, so as to injure my name and reputation with the Supreme Pontiff.

As the rule of divine and human Law required — with no abusive Remonstrance and no slander — Clavius supposed that he was entitled to defend by a public reply the Gregorian Calendar which Viète had thought it right to attack in a public work; and that suit had to be decided not by rubrics and Canons but by astronomical calculation. Nor is Clavius the man to want anything taken away from anyone's name and reputation; nor is the Pontiff the man to lend his ears to detractors. At this point Franciscus Vieta fails to consider that, if Christophorus Clavius was ever accused by him, it is now Clement viij. who is being accused — the Pontiff who, though he alone ought to preside over this judgement, is supposed to be letting Clavius use recrimination in contempt of divine and human Law, and grant himself licence to pass sentence in his own case.

Moreover, in a good many letters, written to a good many people, he lets it be known that he has thoroughly refuted my pamphlet in a book on the new restoration of the Calendar, to be published one day, if it please God.

Clavius denies that he has written any letter to anyone on the subject, except one to Doctor Adrianus Romanus [Adriaan van Roomen], who had asked him what he thought of Viète's Calendar. Nor would it have been a crime to write that he had done what in fact he did do, and with the highest credit, in that book which — whether or not it pleases Viète — it will at last please God to have brought out into the light.

What insult is this, Clavius? What insolent and empty boasting? Is it that, because you have made an attempt (as by your own right you may) to refute my pamphlet, you have therefore refuted it? Let that attempt of yours come out, and, God willing, I shall break it tomorrow — today, in fact.

Mind your language, Francis. You are not saying this in a corner: you are offering it to everyone's ears and eyes. What do you think men will make of you — men who know Clavius (and who does not know him?) — when they see you flinging insult at a man of the greatest moderation, and a priest, with so much insolence, vanity and boastfulness (I turn your own words back on you)? That attempt of his will come out; break it yourself this very moment, if you have it in you; and if you cannot do it today or tomorrow, break it the day after, or on another day and another, in another year, another century. You will have God on your side, if what you want is something good.

That is not the order of judicial proceedings and process. I have demonstrated that you are a false mathematician — if indeed you are a mathematician at all — and a false theologian. And so, when the plan is to prosecute you as a defendant, your case must be pleaded according to the form of the Constitutions, not bawled out from the wagon [*ex plauastro*]. And if you deny that you are convicted [*contuinci* so printed] by my τεκμηρίοις [Greek: *tekmēriois*, "proofs"; the sort after μη is the fount's bowl-with-descender ρ, which reads as an ε unmagnified — established by comparison with τεκμήρια on the same tile], then the fallacies of my demonstrations must be exposed and pointed out before the Judges who have been agreed upon, before you are acquitted by their verdict. Before acquittal, your ἀντικατη[?]ορίας, κ ἀλαζονείας [Greek: *antikatē[?]orias kai alazoneias*, "counter-accusation and boasting" — both

genitive singular, set with the fount's curled -ας ligature (which reads as -αι unless magnified) and confirmed by the Latin *tuæ*; the tightly-kerned sort after μη, very probably γ, does not resolve [?]] count for nothing.

Which of the two is the false theologian and mathematician, Viète or Clavius, the book of the *Explicatio Calendarii* will demonstrate rather more openly, more lucidly, and more humanely than Viète does here. From it, too, it will be plain how absurd Viète's τεκμήρια [Greek: *tekmēria*, "proofs"; the same bowl-with-descender ρ] are, and how solid Clavius's arguments are on every point, by which they are refuted. And as for which of the two speaks "from the wagon" — or rather, ὅλας ἀμάξας βλασφημιῶν κατασκεδαί[ση?] [Greek: *holas hamaxas blasphēmiōn kataskedaí[sh?]* [Greek: *holas hamaxas blasphēmiōn kataskeda...*, "pouring down whole wagon-loads of abuse"; the page prints no terminal ν — the two glyphs after κατασκεδαί read as ση (possibly ση) and are given with a query] — this generous Remonstrance speaks for itself. About judges and the pleading of the case I add not a word: sentence will be passed by a competent Judge. For the rest, let the whole race of men be judge as well.

And what new anxiety is this that holds you about a book on the new restoration of the Calendar, when that book has already been published by me — a book which holds its place and its force, as was only right, from the very day of the decree?

Viète's Calendar was published barely two years ago; the decree is already twenty years old. So from the day of the decree, Viète's work — that is, eighteen years before it existed — has held its force. Who would deny that a thing had a place before it existed, when after it began to exist it has none? It belongs to that class of things for which the best is not to be born, and the next best to be abolished as quickly as possible.

The edition you are planning is untimely, and from now on to be spurned as false and plagiarized. Its falsity even a repeated day will convict. As for the plagiarism — my book, my *Report on the truly Gregorian Calendar*, I mean, with its theolo-

—gical, political and astronomical [supports], and fortified [*muniti*] on every side. Δὶς καὶ τρεῖς τὰ καλὰ [Greek: *dis kai tris ta kala*, "twice and thrice the good things" — the proverb for what bears repeating; this first setting prints τρεῖς, the fount's ε-for-ρ substitution (its ρ carries a long descender), and is transcribed as set — the italic re-quotations below set τρεῖς correctly]. But since it is your intention and your design to snatch away another man's right, it is not for you, Clavius, αὐθις ἀ[??]ζήλω

εἰρημένα μυθολογεῦν [Greek: "to make a tale once more of things already said quite plainly" — Homer, *Odyssey* XII, where the received text reads αὖτις ἀριζήλως; the θ of αὖθις is clearly inked in the fount's curly θ sort, and the two glyphs after the initial ἀ do not resolve on the scan [?]].

Here is a man with a modest opinion of himself — a man who may fairly be allowed to point out φιλαυτίαν [Greek: *philautian*, "self-love"] and ἀλαζονείαν [Greek: *alazoneian*, "boastfulness"] in somebody else! He has been caught in manifest astronomical errors; he overturns rites that have flourished in the Church from the most ancient times down to this day; he acts openly against the peace of the commonwealth — and then he says, Δις κ τρις τὰ καλὰ. The effect is that anyone who wanted to fling these very words back at the man who has overturned matters theological, political and astronomical would have his material ready to hand, with only a K put into the place that Λ wrongly occupies. And on the charge of plagiarism, what does he say? Does he seriously suspect that Clavius has filched those brilliant doctrines of his? — those doctrines, Δις κ, τρις κακά [Greek: *dis kai tris kaka*, "twice and thrice the bad things" — the proverb turned by the single letter just described]. Very well then: Clavius will publish them — not his own, perhaps, but at least good. Yet what sane man would entertain such a suspicion of plagiarism, when it has for so long been perfectly well known to everyone that Clavius was at work on the *Explicatio* of Gregory's Calendar; and when a great many know that it was finished before Viète appeared, and would have been published even then, had Viète himself not given cause for something to seem worth adding in its commendation? Learned men, indeed, will decide the point — men who know Clavius's *Apologia*, published long ago, and who will easily notice what Viète has carried over from it into his own Calendar: which of the two is guilty of the plagiarism, Clavius or his accuser. Take the equation of the Sun in the four-hundredth year, and the equation of the Moon in the three-hundredth year, with the caution to be applied in twenty-five centuries; and finally the perpetual Cycle of Epacts, which our Clavius was the first to compress into a summary and a short compendium out of Lilius's expanded table, in the Calendar that Pope Gregory issued, and which he repeated in his defence against Maestlin and at last in the *Explicatio* of the Calendar. Perhaps someone would say — truly, and without any suspicion of malice — that Viète drew all this off from the Clavian spring to water his own little garden. Clavius published every one of these things before Viète, and even a date looked up again will prove it. Clavius had neither the intention nor the design of forestalling anybody's right: by a right granted him at the Pontiff's command [*iussu Poncificis* so printed, for *Pontificis*] he undertook the *Explicatio* of the

Calendar and carried it through. And even if Viète had committed no fault at all, he still ought not to persuade himself that the spring of genius has been drained dry by him. Much was left over for Aristotle after Plato, and for many others after Aristotle; and in mathematics too the excellence of outstanding men is no less abundant.

As for the Pontiff's hatred, which you strive by evil art to stir up against me — take care that you do not find it embittered against yourself instead. Οἱ αὐτῷ κακὰ τεύχει ἄνῆρ, ἄλλῳ κακὰ τεύχων, Ἡ δὲ κακὴ βδλή τῷ βδλεύσαντι κακίση [Greek: "a man contrives evil for himself in contriving evil for another, and the evil counsel is worst for the counsellor" — Hesiod, *Works and Days*; the ligature sorts ϑ (= ου) and ς (= στ) are kept as sorts, and the opening Oi is left as printed where the received text has οἱ].

He is afraid that some man's evil art may make him hateful to the Pontiff undeservedly — when he himself has done [?] the very things for which he deserves to be hated. For in a case that touches Religion and the public good, a case in which he professes that the supreme authority of the Supreme Pontiff is at issue, he has dared so much that he seems to have set out deliberately to try the Pontiff's Clemency and to provoke against himself a hatred entirely justified — and even now he does not stop embittering it, while he scatters Remonstrances of this kind about. Listen, fair-minded judges, and consider where the words he adds are meant to lead.

For what if the Protestants embrace the true reckoning of the year, which I have faithfully reported out of Gregory's own mind, and acknowledge it as coming from themselves and not from the Supreme Pontiff?

He asks what will happen if the Protestants accept the reckoning of the year that he has reported. That is easy to say: those will accept it who in plain fact do not accept the sacrosanct Gospel of Christ. But Viète — ποῖον σε ἔπος φύγεν ἕρκος ὀδόντων, ὅρσεις μετ' ἀκίνητα διὰ φρενῶν φράσαι [Greek: "what a word has escaped the barrier of your teeth..." — the Homeric formula, transcribed as the page sets it; the page carries no accent on the second omicron of ποῖον]. How is it fitting, in a business of this kind, to make any mention of such people at all? Is it Clavius you are threatening, or the Pontiff? Grant that you have discovered something good: did you discover it in order to arm the enemy? A change made from what is good is not always praiseworthy, even when it is a change for the better. And so what you had worked out should have been offered by you to the

supreme Prelate of things sacred, for him to bring out — if he saw fit, in the manner and at the time he saw fit — and not flung out suddenly among the common people in a way calculated to feed the impious dissensions of the heretics. What, in the end, are these words of yours driving at now? Is it not to point the firebrands, who are pressing for a chance to set everything ablaze, to the opportunity you have handed them? But there is this much comfort: that torch of yours has more smoke in it than light. You, of course, have faithfully reported the reckoning of the year out of Gregory's mind — you who set up your own Calendar in flat opposition to the Gregorian one! Then let the Protestants acknowledge Viète's restoration as their own, as much as they please. For no one can acknowledge as coming from the Pontiff a thing that is false and hostile to the rites of the Church. And what of you in that case — for I take you to be a devout man? Would you not rather have had no talent at all than have had the talent by which you soldier for the most worthless deserters against the Church of God?

To whom is it that you so obstinately ascribe your own reckoning, false and moreover absurd and monstrous? And so let him shun its authority — nay rather, let him one day convict you as a false Procurator and defender.

He presses his purpose steadily — not to say obstinately. Under Clavius's name he goes on abusing the Gregorian Calendar; the most learned men who made it; those who presided over the making; the Pontiffs who approved it and set it before the Church; and the Princes, Commonwealths and Peoples, all of them, who received it. The danger is real indeed: that once Viète's Calendar has been received from the Protestants, the Pontiff will learn the true rites of the Church from them, and will at last, one day, convict Clavius as a false Procurator and defender — that is, when Peter's successor accepts a Calendar from Protestants, and Christ's Vicar learns from heretics how to correct the erring Church. Immortal God! It can never have come into Viète's mind to say such a thing — however much he does say it.

Julius Caesar corrected the year, and he too was Supreme Pontiff. But when the priests carried out the Julian ordering of the year badly, Augustus Caesar removed the error — and he too was Supreme Pontiff. On that account no less glory was assigned to him than to his predecessor Julius. Great is the glory of Gregory the Great in the restoration of the year. But no less will be the glory of Clement the Great, when he has rejected you — an ill-occupied reckoner — together with your false periods and your hypotheses that conflict with the divine law in fixing

the beginning of the year, and has decreed by an Apostolic Brief the lawful execution of the Gregorian diploma. And this even though, to keep that from happening, you smear the Pontiff's face for the present moment, drawing darkness over matters that were clear, κ βαδίζων, ὡς ὄνος, εἰς ἄχυρα τραγημάτων [Greek: "and walking, like an ass, to the chaff from the sweetmeats" — the proverb of the ass that leaves dainties for straw]. But you alone as a law to yourself — to come back to your slanders — no one will tolerate.

There is no call for you to mock the Roman Pontiffs with your inept learning. What, I ask, becomes of the great glory of Gregory the Great in the restoration of the year, if he promulgated a corrupt Calendar on pontifical authority? And how is the glory of Clement the Great no less, if for the present moment he lets his own face be smeared by Clavius, and lets darkness be drawn over matters that were clear in a case of religion and of the public good, and lets the Church remain in error until it has Protestants for its teachers? Each of the two Pontiffs, truly Great, has a glory of his own — solid and unalloyed, from many other quarters and from this one as well: Gregory's, that he restored the Calendar; Clement's, that he does not allow you to destroy it. As for that utterly unjust insult, this is my whole answer, and a friendly warning with it. Viète, you are not on the right road: it is plain that you are worked up, plain that you are intemperate, over-fierce, contemptuous. You are a learned man, of course; you know how famous the saying is, that speech is εἶδωλον τῆ βίῃ [Greek: *eidōlon tou biou*, "the image of a man's life"; the ῆ (= ου) ligature sort kept as printed]. What need was there to shove a jeer in at this point? Or, if I cared for my wit on the bitter side, would not the Aristophanic bird conveniently furnish me an omen against you — you who guarantee that the ailing year will soon be better off through your good offices? But I would rather that you, now that the heat has boiled off, were at long last rebuked by your own self.

Unless you take the warning and come to your senses, you are bound to clear yourself of the charges you stand accused of, and meanwhile to obey the Civil Constitutions.

There is no one of sound judgement who thinks Clavius guilty of any charge whatever. On the contrary, everyone acknowledges owing him a great deal, because he expounds the Gregorian Calendar and, prudently and piously, dissolves the charges brought against it, whether impiously or rashly. There is no Civil Constitution and no Canon that he has not obeyed; he has never laid a hand on any pontifical diploma; he has never published a book on matters touching

Religion without pontifical authority. In short, he has never so much as contemplated any of the things that Viète, having done them, then ἐκτραγωδίζει [Greek: *ektragōdizeî*, "turns into high tragedy"] — while he also threatens the very people he ought least of all to threaten.

But I beseech you, Venerable Fathers and Prelates of the Society of Jesus: use your own authority over your own colleague and hold an inquiry into him; and, when the case has been heard — ἢ χαμόθεν, ἢ πρὸ βήματος [Greek: "either from the ground or from the tribunal"] — set yourselves squarely against his obstinacy and his spite. Do not let him alone, with his false and unhappy Apologetics, so ill-deserving of the Apostolic See, be the reason — to the insult and reproach of your College — why the Calendar is not received back by all the nations that used to use the Roman one, restored as it has been under the most fortunate sponsorship of Gregory xiiij. Let him be κενόδοξος ἐν ταῖς ἀδιαφόραις [Greek: *kenodoxos*, "vainglorious," in matters indifferent], by all means; but let him be ὀρθόδοξος ἐν ταῖς ἱεραῖς καὶ ὁσίαις [Greek: *orthodoxos*, "orthodox," in things sacred and holy].

For this admonition and adjuration I quite believe that the Fathers and Prelates of the Society of Jesus, excellent men as they are, are grateful to their monitor. To me, however, who read the thing for what it is, this looks like no adjuration but an insult. What is it Viète is saying? What need was there of this adjuration? Did you suppose that prudent and religious men would trust your whisperings more than their own eyes? You have never, I imagine, so much as seen Clavius. But he has a great many colleagues, with whom he has lived for very many years; they are diligent, watchful men, and they have charge of his life and conduct. Not one of them has ever marked him with a single one of the charges you shout about. They have known him not only as ὀρθόδοξον ἐν ταῖς ἱεραῖς καὶ ὁσίαις, but have also admired him as a man ἐν ταῖς ἀδιαφόροις διαφέροντα ἀφιλόδοξον [Greek: "outstanding in matters indifferent, and no lover of glory" — the play on διαφόρ-/ἀδιαφόρ- is the printer's, kept as set]. So you have seen more than all of them? And what is less capable of being kept hidden than κενοδοξία, ἀλαζονεία [Greek: vainglory, boastfulness], obstinacy, spite? Or let this Remonstrance of yours simply be read. And yet Clavius, so he tells us, once deceived Gregory; now he smears Clement's face; he persists in spite and obstinacy — and nobody ever noticed things so open and public: not his intimates, not his colleagues, not the Prelates, no good man at all. Nobody except you, sited far away across the Alps — and not even you, until after Clavius began to refute your Calendar. Whoever, then, you can convince that these things were rightly said and rightly seen by

you, is a man to whom you may commend your Calendar as well. But whether Clavius has deserved well or ill of the Apostolic See by his Apologetics — who on earth does not know? And whom do those Apologetics distress, except heretics — and Viète?

How much disturbance a disagreement over the reckoning of the year stirs up, and how much trouble in the exchange of goods at the more frequented fairs and at every considerable trading centre! And besides that, it nurses dissension of minds on the disputed heads that bear on Religion.

You tell the truth — but who introduced this disagreement, and who keeps it alive, if not the heretics, so as to set themselves against Catholic rites and the Roman Pontiff as far as they can? What astonishes me about you, Viète, is that you judged yourself the fit man to be, as the saying goes, like a fingernail on this ulcer, and to tear open again the wounds that were slowly closing over.

Let every disguise be stripped away; let pride and spite yield to the force of naked truth. For the equation and ordering of the Epacts, false and profane and moreover absurd and monstrous, let there be substituted one that is just, pious, and free of all absurdities and monstrosities — one that is, in short, as the words of the diploma and an honest interpretation of them establish, truly Lilian and Gregorian.

Let it be exactly so: let pride and spite yield to truth; let the passion for innovation yield to pontifical authority; and let everything that insinuates itself by stealth, without the Pontiffs' knowledge, and insidiously angles for authority out of false titles, yield to the Calendar that Gregory promulgated with his own diploma, while he was alive and watching. Let the reckoning of the year be the Lilian one, which Lilius proposed; let it be the Vietan one, which Viète proposed; and let lawful authority suppress as soon as may be the reckoning contrary to that one [*& hanc nempe nempe illi* so printed — *nempe* set twice across the line-break; recte: *& hanc nempe illi*] which is true, convenient, and perfectly congruent with the Canons, the Fathers, and the Gregorian diploma.

No astronomer will show himself anywhere in the world, and no one who swears by the words of those expert in the art, who will fail to admire the admirable Gegorian [so printed, for *Gregorianam*] restoration of the year; and if any such man happens to have strayed from the Holy Roman Church, he will not fail to press at once to work his way back into it, ἀμφασίη κραδίην ἀμφιχυθείς μεγάλη [Greek: "his heart wrapped about

in a great speechlessness"]. This is the very thing that all devout men have in their prayers, Venerable Fathers and Prelates.

This is the very thing that all genuinely devout men have in their prayers, and we hope it will come about in great measure, once the solidity of the Gregorian Calendar has shown itself the more clearly out of Viète's fruitless attempts, and it has been made plain to everyone how many errors that new invention of his teems with — as everyone will see plainly from the book of the *Explicatio Calendarii*.

Whoever shall have obstructed so great a good of the Christian commonwealth, by aid, by counsel, or by malicious guile — let them be accursed and incapable of bearing witness, and let them be barred as outcasts from the blessed assembly of the devout.

About the word "outcasts" I have my own suspicions. But I shall pursue nothing except your own curse. Those who shall have resisted pontifical orders; who shall have put anything under pontifical diplomas other than what the Pontiffs willed; who in any way at all, out of a passion for innovation, shall have dared to tamper with what stands in good order [*moliri ri* so printed — *ri* set twice across the line-break; recte: *moliri*]; who, in short, by aid, by counsel, or by malicious guile shall have obstructed the good of the Christian commonwealth — let them be anathema.

F I N I S.

Blank leaf. No printed text, no running header, no page number, no signature, no catchword.

Blank leaf (verso of the preceding). No printed text, no running header, no page number, no signature, no catchword.

Blank leaf — the heavily soiled last endleaf. No printed text of the book: no running header, no page number, no signature, no register, no colophon, no catchword.